Megapixel
1280 x 960
software zoom

30 Frames/s
VGA (640 x 480)
10 fps Mega

-22°F to +140°F
Weatherproof
-30°C to +60°C, IP65
no heating necessary

IEEE 802.3af
PoE
network power
even in winter

microphone & speaker
Audio
bi-directional via IP
variable framerates

Video SIP Client
IP-Telephony
alarm notify,
cam remote control

Video motion
multiple windows
precision pixel-based

lip-syncronized audio
Recording
event-ringbuffer
30 cams each 30 fps

Live viewing
30 cams at 30 fps
all on one screen

Backlight
safe using CMOS
without mechanical iris

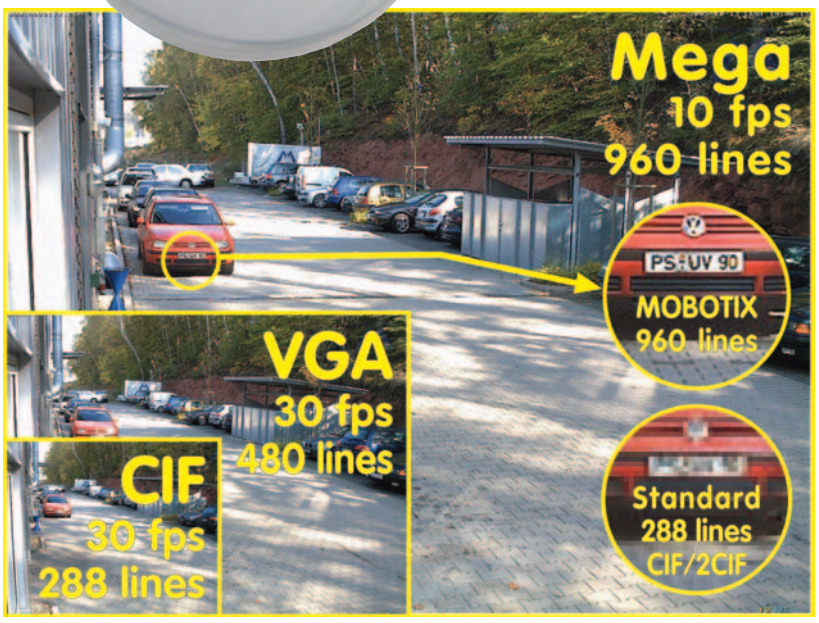
Vandalism-protected
Wall bracket
with cable cover
for RJ45 wall outlet

Robust
no moving parts
fiber glass housing

D12

Camera Manual

Part 1



Complete integration for web and security

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Security-Vision-Systems
MOBOTIX

MOBOTIX ... the new face of IP video

MOBOTIX Camera Data

Enter the data of your camera here!

Camera Model: _____

Camera Name: _____

Factory IP Address: ____ . ____ . ____ . ____

Current IP Address: ____ . ____ . ____ . ____

DHCP: activated ❑ deactivated ❑

Admin User Name: _____

Admin Password: _____

ISDN Dial-In Number: _____

ISDN User Name: _____

ISDN Password: _____

Notes:

Note: MOBOTIX offers inexpensive seminars that include a workshop and practical excercises:

Basic Seminar 3 days, **Advanced Seminar** 2 days.

For more information, see **www.mobotix.com**

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IP65 CERTIFICATE
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Note

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Further information:
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Notes:

1 INTRODUCTION

D12 Standard

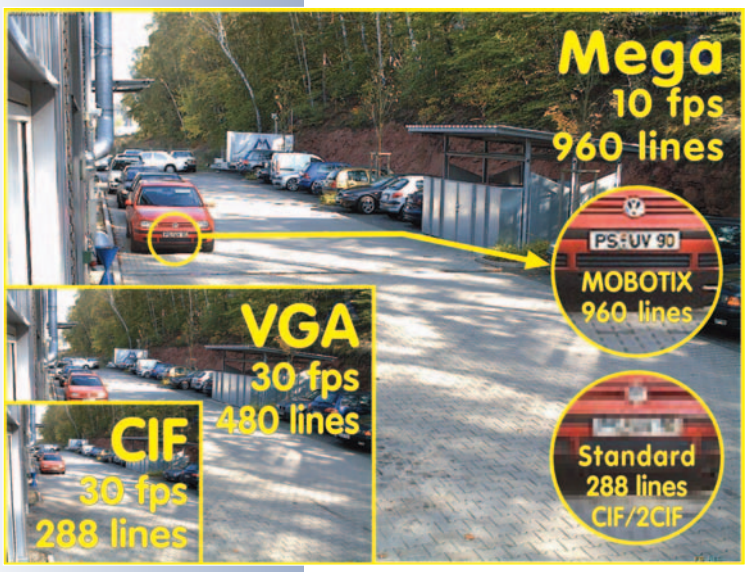
The **D12** camera range represents the second generation of MOBOTIX network cameras. Now more powerful than ever, the new compact models are capable of creating high-resolution live video streams with high image rates. When showing **VGA video (640x480)**, the camera can deliver up to **30 fps**. Even **Megapixel video (1280x960)** will generate up to **10 fps**. The camera transmits realtime sound from the microphone, even in the browser.

30 frames per second!

Similar to other MOBOTIX cameras, these cameras are available as **SECURE**, **IT**, **WEB** and **BASIC** models with different software features; the Web and Basic models do not have a microphone. The D12 can be fitted with any of the five high-performance lenses; additional lenses will be available in the future. Apart from the standard version, the MOBOTIX D12 is offered in two additional **versions**: the **D12D-180°** offers a 180° panorama view and the **D12M-CS** is equipped with the **CS-Mount lens** (24 - 54 mm) already used in the **M22M-CSVario**.

Everything integrated!

Like all other MOBOTIX cameras, D12 models are more than "just a camera"; the integrated software features (Secure/IT models) include a multitude of functions, such as **video motion detection**, **long-term recording**, **alarm messaging** and **video IP telephony**. In comparison to camera systems from other manufacturers, buying and installing additional software on the computer is thus unnecessary. Instead of using a web browser, you can also download the free **MxControlCenter** for Windows from **www.mobotix.com**, which allows displaying multiple cameras on one monitor. Moreover, MxControlCenter can also process incoming alarms from the camera and allows for comfortably searching and evaluating the alarm video clips (including audio).



Because of the low power consumption of only 3 Watts, the MOBOTIX D12 cameras feature the highest operating temperature range from **-30 to + 60°C (-20 to 140°F)**. Since MOBOTIX cameras neither fog up nor require heating, power can be supplied using standard PoE products. All models can cover wall outlets, thus providing for perfectly protected cabling.

Using the new **MX Interface Connector** with D Sub 15 HD socket, you can directly connect external lamps, devices, sensors, microphones and audio amplifiers. The **MOBOTIX Cam-IO** expansion box simplifies installing the camera and expands on these possibilities. All external devices, sensors and the Ethernet cabling are connected directly to the expansion box. Likewise, the **MOBOTIX Cam-IO** installation box connects directly to the mains and supplies power to the camera, without requiring any other type of power supply.

180° panorama view with the MOBOTIX D12D-180° (available Q2/07)

D12-180° façade surveillance with one camera

The MOBOTIX **D12D-180°** is equipped with two 90° Super-Wide-Angle lenses mounted on a single lens holder and delivers 180° panorama images. Using **only one camera**, you can cover one side of a building and the adjacent areas (parking lots, lawns, etc.).

MOBOTIX D12M-CS for CS-Mount lenses (available Q2/07)

D12M-CS

The MOBOTIX **D12M-CS** is equipped with a **CS-Mount lens** (24 - 54 mm), but also allows using other CS-Mount lenses.

Outdoor Wall Mount (optional accessory)

Using the **Outdoor Wall Mount** allows employing the MOBOTIX D12 for **outdoor surveillance** and provides for easy installation at walls. The Outdoor version is **IP65**-certified (dustproof, resistant against water jets). The Outdoor housing also covers RJ45 wall outlets and brings ample space for additional modules (rechargeable batteries, 3G/UMTS, WiFi, etc.). **The Outdoor Wall Mount is available for all D12 models!**

D12 with Outdoor Wall Mount (IP65)

Corner and Pole Mount (optional accessory)

If you would like to mount the camera to a 90° corner of a building or to a pole, you should consider using the **Corner and Pole Mount** together with the **Outdoor Wall Mount**. **The Corner and Pole Mount is available for all D12 models!**

D12 with Corner and Pole Mount

1.1 MOBOTIX Cost Benefits

1. **Increased resolution reduces amount of cameras**
   960-line, high-resolution sensors give a better overview and allow monitoring an entire room with just one camera from the corner

2. **Reduced installation costs at any distance**
   Standard Ethernet connection enables the use of common network components such as fiber, copper and wireless (WiFi)

3. **Intelligent recording technology reduces storage**
   Decentralized recording technology in the camera software puts less strain on PCs and reduces the amount of storage PCs (DVRs) by 10 times

4. **Event-controlled image rate minimizes storage cost**
   Event-driven, automatically adjusted recording frame rate based on event or sensor action reduces amount of data and storage costs

5. **No additional power and no heating required**
   Anti-fogging without heating allows usage of standard PoE technology to power the system via network and saves costs of power cabling

6. **Backup power requirement reduced by 8 times**
   Low power consumption, 3 Watt, enables year-round (no heating required) PoE with one centralized UPS from installation room via network

7. **Robust and practically maintenance free**
   Fiberglass-reinforced composite housing with built-in cable protection and no mechanical moving parts (no autoiris) guarantees longevity

8. **No software and no licence costs**
   Control and recording software is integrated in the camera and is free of charge; new functions are available via free software downloads

9. **Unlimited scalability and high return on investment**
   While in use, more cameras and storage can be added at any time; image format, frame rate & recording parameters can be camera specific

10. **Additional functions and other extras included**
    Audio support, lens, wall mount and weatherproof housing (-30° to +60°C, -22° to +140°F) included; microphone & speaker available in certain models

1.2 MOBOTIX Technical Advantages

1. **Progressive-scan instead of half-frame blur**
   Megapixel sensor and image processing inside the camera with digital white balance generates sharp and true color images at every scale

2. **Sun and backlight compensation**
   CMOS sensor without auto iris, digital contrast enhancement and configurable exposure measurement zones guarantee optimum exposure control

3. **Dual camera technology: 2-in-1**
   Two possible camera views with picture-in-picture technology or 180° panoramic view; one Dual-Fixdome camera with 2.5 megapixel is enough

4. **Long-term, high-performance Terabyte recording incl.**
   Event detection and ring buffer recording by the camera itself allow recording of 40 smooth video streams on a single PC (1200 VGA images/s)

5. **Simultaneous recording, event search and live viewing**
   Live video for multiple users, recording and event search simultaneously possible in seconds from anywhere in the world via network

6. **Very low network load**
   Efficient MxPEG video codec, motion detection based recording and video buffering inside camera guarantee a very low network load

7. **Bridging of recording during network failures**
   Internal camera ring buffer bridges network failures and bandwidth fluctuations of wireless links (WLAN/UMTS) for several minutes

8. **Day & night maintenance free**
   Unique Day/Night camera technology without moving parts guarantees extreme light sensitivity and ensures long-term reliability

9. **Audio and SIP telephony**
   Lip-synchronized audio (live & recording); each camera is a video IP telephone based on SIP standard with automatic alarm call and remote control

10. **MxControlCenter included**
    Dual screen technology with building plans, free camera positioning, event search, image processing, lens distortion correction and PTZ support

1.3 MOBOTIX D12 Concept

High-Resolution Live Video (640x480) with up to 30 Frames/s

The second generation of cameras from MOBOTIX now delivers smooth live video display in VGA format with synchronous live audio, yet it keeps the network load to a minimum (approx. 2 Mbps). Live video display now match the performance of analog video systems. When recording, MOBOTIX systems easily outperform analog systems, since MOBOTIX cameras store the same resolution and quality with the same frame rates as in the live display. MOBOTIX technology thus allows **simultaneously** recording the video from **30 cameras in continuous recording mode on one standard PC at 30 fps each, including the audio channel** of the cameras.

Low Bandwidth Requirements

MOBOTIX' patent pending **MxPEG** streaming format allows fast live video with audio at extremely low network load (1 to 2 Mbps). Since the MOBOTIX camera itself detects movements in the image, video is only transmitted if movements occur, and when the video and audio data are stored.

Voice over IP and ISDN

Moreover, **MxPEG** provides for synchronized audio and two-way communication between the camera and your computer. Room surveillance with audio is possible using Internet Explorer or MxControlCenter. Alarm notification on your mobile via Internet (SIP) or ISDN telephony is just as easy as event-controlled voice messages directly from the camera.

IP Telephony!

IP Telephony and Video SIP

All telephone features can be used via Internet telephony thanks to the integrated SIP client. The SIP client allows remote-controlling the camera using the touchtone keys and also places the alarm calls of the camera. Video SIP establishes audio/video connections to the camera using Windows Messenger or similar applications (e.g. CounterPath X-Lite/eyebeam).

Long-Term Storage Included

MOBOTIX cameras have an integrated long-term storage system for Linux, Windows and Mac OS X computers. Every camera manages its own storage space as a ring buffer on the shared folder. Thanks to this decentralized approach, 30 live cameras can store images on a regular Pentium 4-class computer with **30 fps each**, including audio (also depends on the operating system).

Event Storage on SD Card

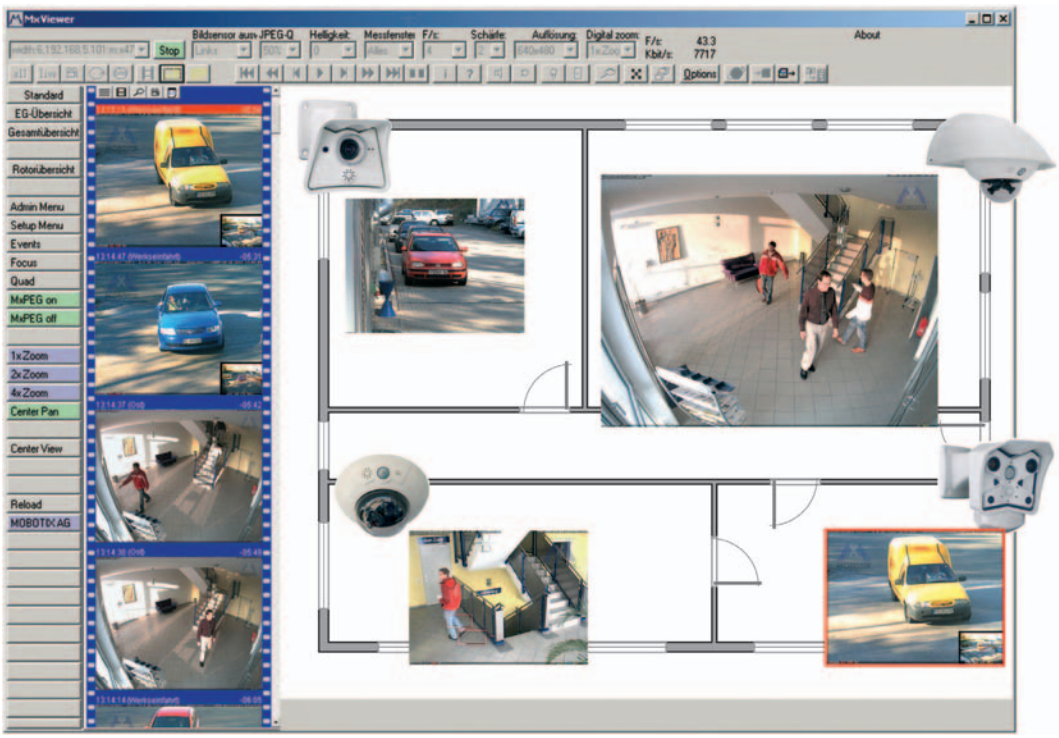
An SD card can be inserted into the integrated slot to increase the internal memory of MOBOTIX D12 cameras (SD cards will be supported in future software versions). A 2GB card can permanently store up to 65,000 images in CIF format, 40,000 im-

ages in VGA format or 13,000 Megapixel images, which are not lost in the event of a power failure.

If long-term storage on a file server has been set up, the SD card adds yet another layer of security against loss of data, as the SD card can easily bridge longer network outages.

30 Live Cameras Using MxControlCenter

The free **MxControlCenter** for Windows client allows viewing up to 30 MOBOTIX cameras with audio and now features an integrated layout editor for quick assembly of building plans—using full drag&drop support for positioning the live camera images. Load a floor plan as background image, drag&drop the cameras; done.



Download MxControlCenter free of charge from www.mobotix.com

Event and Time-controlled

Just like event-controlled recording upon detecting movements in the image, the camera can also record when the volume picked up by the microphone exceeds a set trigger value. Using scheduled recording, time tasks can start or stop video recording, uploading of images to a web site or sending of e-mails with video/audio clips. Special programs control vacation times and holidays.

Remote Alerting

In case of an alarm, MOBOTIX cameras automatically pop up windows or activate other functions at a remote security control center. The cameras can use network/wireless, GSM/GPRS/UMTS (3G) or Internet connections for this purpose.

Day & Night

MOBOTIX Night models with two image sensors (color and B/W) deliver brilliant color images during the day and crisp B/W images at night. Cameras switch lenses automatically, depending on the illumination.

Integrated Power over Ethernet

No heating required—PoE is no problem even in the wintertime!

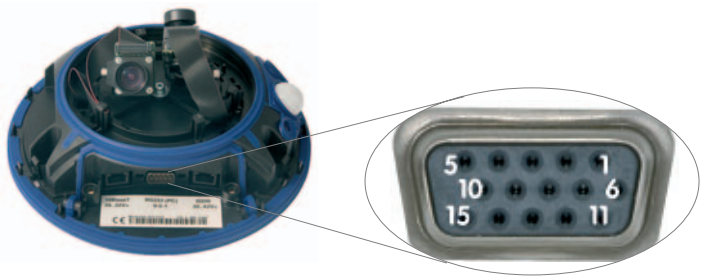
Power is supplied via the network cables using either MOBOTIX **Network Power Adapters with power supplies** or Network Power Racks (4/8/20 cameras per rack) or devices that supply **PoE according to IEEE 802.3af**. Since the camera's housing insulates well and is anti-fogging, no additional heating or fans are necessary. This is why MOBOTIX cameras have low power requirements (3 Watts) and can be operated every day of the year indoors as well as outdoors. Also, for this reason, PoE can be used for supplying power.

Weatherproof

MOBOTIX D12 Outdoor cameras are certified according to IP65 and are designed for outdoor as well as indoor usage. As the cameras do not have any moving parts, they are extremely robust and resistant against heat or cold (-30°C to +60°C; -20°F to +140°F).

Expanded Connections— MX Interface Connector D Sub 15 HD

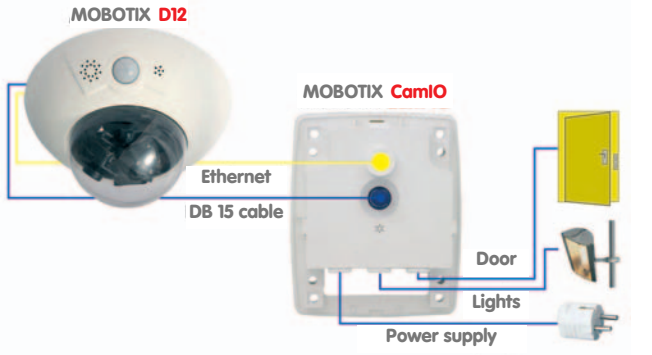
Depending on your requirements, you can connect additional sensors via the **D Sub 15 HD** socket, allowing you to expand the range of sensors already in the MOBOTIX D12. Likewise, you can use the signal outputs of the camera to or trigger external devices, such as alarm systems. This socket also provides a Line In pin, a Line Out pin, power supply for USB devices, USB master data signals and a pin for connecting a backup power supply (can also be used by solar panels).



Easy Installation Using the Cam-IO Installation Box

See section 3.7.2 for more detailed information

The **Cam-IO Installation box** greatly facilitates setting up a security system as this module carries all pins of the **MX Interface Connector** and simplifies connecting external devices and sensors. Besides supplying power to the camera, the installation box can power lamps with up to 500 W/ 230 V (max. 4 A) and has heavy-duty connectors for the remaining pins of the **D Sub 15 HD** socket (e.g. Line In/Out or signal inputs of the camera).



Logos, Animated or Freestyle

The Logo generator of MOBOTIX cameras allows integrating different banners and graphics (including files loaded from any URL) into the current camera images—with optional scheduler control. MOBOTIX cameras are the only network IP cameras supporting animated and transparent graphics.

Logo generator integrated

M10-Web: Megapixel Camera with Logo Generator
multiple logos · free outline with holes · transparency · time driven
Free Contour
1280 x 960 Pixel

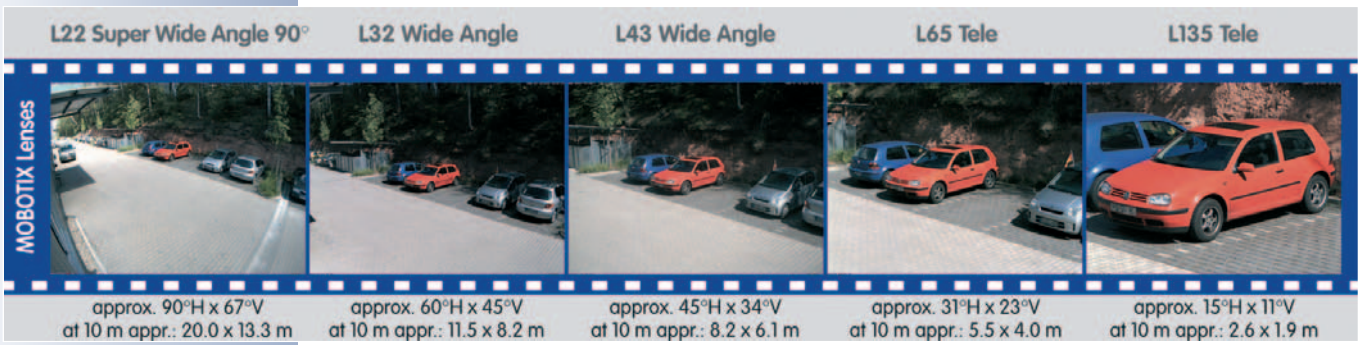
1.4 D12 Standard Lens Options

MOBOTIX currently offers five different lenses with M14 thread from **Super Wide-Angle** (L22) with 22 mm to **Tele** (L135) with 135 mm focal length (equiv. to 35mm camera). Since MOBOTIX cameras are backlight-proof, these lenses do not require an auto iris. Without the iris as a mechanical component, these glass lenses are extremely robust and maintenance-free.

Available lenses!

You can choose between the following lenses for the MOBOTIX D12: **L22 Super Wide-Angle 90°**, **L32 wide-angle**, **L43 wide-angle**, **L65 tele** and **L135 tele**. The **L22 Super Wide-Angle 90°** has very little distortion, even when using the 4x digital zoom of the D12. If a camera with a Super Wide-Angle lens has been mounted in the corner of a room, the complete room is visible on the image.

L22 Super Wide-Angle 90°


L22 Super Wide Angle 90°
L32 Wide Angle
L43 Wide Angle
L65 Tele
L135 Tele
MOBOTIX Lenses
approx. 90°H x 67°V
at 10 m appr.: 20.0 x 13.3 m
approx. 60°H x 45°V
at 10 m appr.: 11.5 x 8.2 m
approx. 45°H x 34°V
at 10 m appr.: 8.2 x 6.1 m
approx. 31°H x 23°V
at 10 m appr.: 5.5 x 4.0 m
approx. 15°H x 11°V
at 10 m appr.: 2.6 x 1.9 m

Note

The focal lengths of MOBOTIX lenses do not reflect the actual focal length of the lenses, but the focal length (*Lxx* mm) converted to 35 mm camera format. For example, the MOBOTIX Super Wide-Angle lens has an actual focal length of 4 mm. This would be the equivalent of 22 mm on a 35 mm camera and thus leads to the designation *L22* for the lens.

Since the image sensors in digital cameras have different sizes, converting to 35 mm camera format provides for better comparing the image format and field of vision parameters of different lenses. Another benefit is that you can easily set a 35 mm camera (analog or digital) to the same focal length (*Lxx*) to obtain the same field of vision. This approach greatly facilitates lens selection.

Focal lengths of MOBOTIX lenses are always given as compared to a 35 mm camera!

To determine the lens you need, simply use a camera with zoom lens to find a matching MOBOTIX lens

Lens Table

Order name	L22	L32	L43	L65	L135
Original image					
35mm equivalent	22 mm	32 mm	43 mm	65 mm	135 mm
Focal length	4 mm	6 mm	8 mm	12 mm	25 mm
F-Number	2,0	2,0	2,0	2,0	2,5
Image angle horizontally	90°	60°	45°	31°	15°
Image angle vertically	67°	45°	34°	23°	11°
Distance 1 m	**m**	**m**	**m**	**m**	**m**
• Image width	2,0	1,1	0,8	0,5	0,3
• Image height	1,3	0,8	0,6	0,4	0,2
Distance 5 m	**m**	**m**	**m**	**m**	**m**
• Image width	10,0	5,7	4,1	2,7	1,3
• Image height	6,6	4,1	3,0	2,0	1,0
Distance 10 m	**m**	**m**	**m**	**m**	**m**
• Image width	20,0	11,5	8,2	5,5	2,6
• Image height	13,3	8,2	6,1	4,0	1,9
Distance 20 m	**m**	**m**	**m**	**m**	**m**
• Image width	40,0	23,0	16,4	11,0	5,2
• Image height	26,6	16,4	12,2	8,0	3,8
Distance 50 m	**m**	**m**	**m**	**m**	**m**
• Image width	100,0	57,5	41,0	27,5	13,0
• Image height	66,0	41,0	30,5	20,0	9,5

1.5 The MOBOTIX D12D-Fixdome Outdoor

1.5.1 MOBOTIX D12D-Outdoor Concept

The two image sensors can look into the same or into different directions

As an innovative camera system, the MOBOTIX D12D-FixDome has captured an impressive piece of market share in the network camera market. Thanks to its two image sensors, this camera system delivers video surveillance of one scene in day/night mode (**Night** models) or it can monitor two different areas using different day or night lenses.

The D12D-Outdoor and the wall mount now allow mounting this unique camera system outside for enhanced outdoor surveillance. Besides the many advantages inherent to the MOBOTIX concept, the **outdoor wall mount offers these additional benefits**:

Perfect weather protection for an innovative camera system

When mounted to the outdoor wall mount, the MOBOTIX D12D reaches protection class **IP65** (absolutely dustproof, resistant against water jets). Operating temperatures may vary between -30°C and +60°C (-22°F to 140°F), making it the ideal camera for the most demanding weather situations. From stations in Antarctica to production monitoring at a steel smelting plant—MOBOTIX cameras offer unmatched flexibility and versatility.

Simply mounted outdoors

Elegantly covers wall outlets

Since the wall mount and the wall sealing have been designed to fit over outdoor wall outlets, providing the network connection can be separated from actually mounting the camera. After the position of the wall mount has been determined, the installer of the MOBOTIX camera system can connect the camera system to an **installed network outlet**, which has been properly tested and configured by the network installer.

Robust design makes for a long life

Like all MOBOTIX cameras, the outdoor wall mount is made from **PBT-30GF** (Polybutyleneterephtalate with 30% fiberglass). This material is used heavily in the automotive industry and is sturdy, resistant against high temperatures, UV rays as well as other environmental influences, chemicals, etc. Combined with the purely software-based design of the MOBOTIX D12D and the free software updates, the whole surveillance system has a long product life and thus provides a high return on investment (ROI).

No yellowing of housing even after years thanks to **PBT-30GF**

Extreme environmental conditions (sand storms, high levels of salt in the air, heavy rain, etc.) may lead to higher abrasion than usual; the wall mount should thus be checked on a regular basis. When planning an application under extreme environmental conditions, you should consider the **MOBOTIX M12 camera models** as they are more robust due to their factory-preset and locked lenses, absence of moving parts and the lower weight. This applies especially to locations that are subjected to vibrations (e.g. when mounted to a ski-lift) and other environmental conditions, (e.g. sand storms, near coast lines, etc.).

Easy to clean

Cleaning the D12D-Outdoor is simple enough—wipe the dome using a lint-free cotton cloth and a mild household detergent without abrasive particles.

Open for enhancements

The outdoor wall mount's design provides for easy integration of WiFi or GSM/GPRS modules within the housing without disturbing the overall appearance of the surveillance unit. Likewise, relays for alarm sirens or lights can be installed easily and elegantly within the outdoor wall mount.

Façade surveillance with the MOBOTIX D12D-180° (available Q2/07)

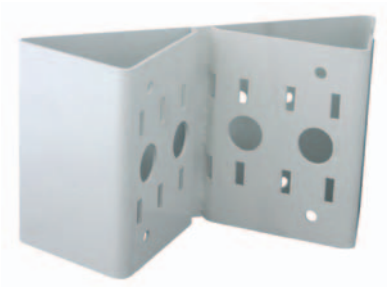
The **D12D-180°** is the ideal camera for monitoring buildings as it delivers a 180° panorama view of the complete façade of a building and its adjacent areas.

More mounting options using the MOBOTIX Corner and Pole Mount

MOBOTIX offers an additional mount that allows securely attaching the outdoor wall mount to 90-degree corners of buildings and to masts. Thanks to the unmatched flexibility when positioning the MOBOTIX D12D-Outdoor's image sensors, large outdoor areas can be monitored using only very few cameras.

Outdoor Corner and Pole Mount

Outdoor wall mount with Corner and Pole mount



Corner and Pole Mount (rear view)

Robust network video system for indoor and outdoor applications

1.5.2 MOBOTIX D12D-Outdoor Product Advantages

Besides the many product advantages inherent to the MOBOTIX D12, the MOBOTIX D12D-Outdoor offers these additional benefits:

- **Attractive design** blends in well with building façades.
- **Perfect weather protection** for the MOBOTIX D12D: IP65, -30 to +60°C (-22 to 140°F).
- **Easily mounted** and perfect cover for outdoor wall outlets.
- **Weatherproof** and **easy to clean** thanks to housing built from **PBT-30GF**.
- Ample room for **extension modules** (WiFi, GSM/GPRS) stored within the housing of the outdoor wall mount.
- High **return on investment (ROI)** thanks to the software-based MOBOTIX design and **free updates**.
- Mounting to building corners and masts (from 60 to 180 mm/2.5 to 7 in) is easily accomplished using the **Corner and Pole Mount** (stainless steel, white).
- Unique **flexibility** when setting the direction of the image sensors provides for thorough video surveillance while requiring relatively few cameras.
- As **D12D-180°**, allows monitoring the complete side of a building with only one camera (available from Q2/07).
- The MOBOTIX **D12M-CS** is equipped with a **CS-Mount lens** (24 - 54 mm), but also allows using other **CS-Mount lenses** (from Q2/07).

1.6 Feature Overview D12

The MOBOTIX D12 includes the following main features (some features are model-dependent):

1280 x 960 pixels

- **Live images** of up to 1280 x 960 pixels resolution via network, ISDN, GSM, GPRS, UMTS, wireless up to 30 fps (at 640 x 480 resolution), also adapted for **PDAs**.
- **Digital zoom** with three stages (1x, 2x, 4x) and integrated panning (from 2x: clicking in the browser image will move the visible image section in that direction).
- **True software scaling** using the proven and continuously improved MOBOTIX algorithms which delivers brilliant images even with smaller image formats (e.g. 320 x 240).
- **Audio video recording** with three different recording modes: Event recording with audio, continuous recording with variable frame rate and audio as well as event-controlled Snap Shot recording of JPEG images.
- **Telephony functions (SIP and ISDN)** for Phone Call-In and remote-controlling from touchtone phones as well as voice phone calls from the camera for alarm messaging purposes.
- **SIP Video** (Internet telephony) with support for e.g. Windows Messenger, x–Lite and video phones.
- **File server tests** can monitor a file server and use one or more of the defined messaging options for error notification.
- **Camera tests** where several cameras monitor each other, with failure notification using the defined messaging options.
- **Playback** of recorded images/video sequences with audio in the integrated video management system.
- **MultiView** screen for displaying multiple cameras or events in one browser window.
- **Event notification** by e-mail, SMS (using a provider), voice notification (Phone Call-Out), sounds and by visual means (e.g. red frame in Live image) using two separate messaging paths.
- **Object tracing** for analyzing the paths of objects that are moving in the image.

Logo generator

- **Logo generator** for displaying logos in the camera images with dialogs for managing image files, image and logo profiles for controlling logo display.
- **Logos** can have **transparent areas** and can be displayed partially transparent at the same time (creating a watermark effect), banner rotation and animations are also possible.

- **Time Tables** for handling customized days, e.g. for holidays and vacations. The time tables are used to control the camera's arming, image recording, action, messaging, logo, obscure image and other features.
- **Remote signaling** for **master/slave** cameras, with the master camera controlling the arming status of the slave cameras). This allows arming all save cameras using a key switch that is connected to the master camera.
- **Transfer profiles** for improved handling of FTP, E-Mail, phone calls, network transmissions and messages.
- Multiple possibilities for connecting external devices, sensors and signal lines using the **D Sub 15 HD socket** of the camera or the **MOBOTIX Cam-IO** installation box.

Speaker phone

- **Speaker phone** with talk, listen and intercom modes via **Internet telephony (SIP) and ISDN** using the integrated microphone and speaker.

Telephony features using ISDN or SIP connections (Internet telephony)!

- **Phone Call-In** to remotely control the camera using a touchtone phone via **Internet telephony (SIP) and ISDN** (retrieve camera information, establish Internet connection, announcement of retrieved IP address, intercom feature, etc.).
- **MxPEG video compression** using **MOBOTIX MxControlCenter**. The ActiveX plug-in for Internet Explorer users brings all advantages of MxPEG (including the audio stream from and to the camera) to the browser-based user interface.
- **Routing** allows using other network connections besides the standard route.
- **DynDNS client** for accessing the camera using a symbolic name (e.g. `mymobotixcam.dyndns.org`) although the provider is assigning a new IP address every time the camera connects to the Internet.
- Inerasable **backup operating system** that is used to restart the camera in the event that a software update has failed, allowing you to restart the update process.
- **Enhanced startup options** for the camera (obtain IP address via **DHCP**, announcement of IP address and other network data, reset to factory default settings).

Free software updates from www.mobotix.com

Software Updates

MOBOTIX provides **free** software updates on **www.mobotix.com** at regular intervals that improve and expand the camera's functionality. Chapter 6, *Software Update*, in the *Software Manual*, provides more information on the process.

1.7 Hard- and Software Differences of the MOBOTIX D10/D12

To cut a long story short – nothing changes with the basic functionality or the looks of the camera. Users, who have worked with D10 models before will not have any problems adjusting to a MOBOTIX D12.

Changing to the three times faster **Intel "Bullverde" PXA270 processor with 520 MHz frequency** has boosted image processing considerably, providing notably higher frame rates (**up to 30 fps in VGA, up to 10 fps in MEGA resolution**). The new hardware also brings new features, such as SIP video (Internet telephony with video) and new possibilities for extending the hardware (SD card, MX Interface Connector, USB master pins for MOBOTIX expansion modules, etc.).

The following table shows the most important **differences in the hardware and software**:

	MOBOTIX D10	MOBOTIX D12
Hardware Differences		
Ethernet interface	10 Mbps	**10/100 Mbps**
Serial interface	D Sub 9	**D Sub 15 HD**
USB connector	--	**USB master** on D Sub 15 HD (for MX expansion modules)
SD card*	--	**SD card** for extra storage
CF slots**	--	**CF slots** for MOBOTIX expansion modules (wireless, storage, ...)
Line In/Out pins for external audio devices	--	**External microphones/PA systems** via D Sub 15 HD
Video in 180° panorama format***	--	**Camera model D12D-180°**
Vario CS-Mount lens 24 - 54 mm***	--	**Camera model D12M-CS**
Backup power supply	--	**Backup power** (6 to 12 V, max. 1 A) on D Sub 15 HD
ISDN power supply	Power supply via ISDN NT	**Not** possible, but can be injected into 8-wire cable (**split cable and power supply or PoE required**)
PoE power supply	MOBOTIX PoE products (MX-NPA + power supply / NPR-4/8/20)	MOBOTIX PoE products **and standard PoE IEEE 802.3af**
Software Differences		
Frame rate (fps)	25 CIF • 12 VGA • 4 MEGA	**30 CIF • 30 VGA • 10 MEGA**
Image formats	CIF, VGA, VGA2, MEGA, Custom	CIF, VGA, VGA2, MEGA, **Panorama**, Custom
SIP video	--	SIP video

* Available end of 2007

** Supported in future software versions; only installed at the factory!

*** Available Q2/07

The only limitation versus the D10 is the power supply via ISDN cable, which is not possible any more. This can only be achieved using MOBOTIX PoE products and the ISDN split cable

1.8 Important Notes

1.8.1 Password for the Administration Menu

Administration menu:
User: admin
Password: meinsm

The administration area of the camera (**Admin Menu** button) is protected by a user name and password:

- User name is `admin`
- Password is `meinsm`

Enter the user name and password exactly as shown above. Note that both entries are case-sensitive.

When accessing the administration menu for the first time, the **Quick Installation** wizard will help you set the most important parameters that are relevant for your requirements. **For security reasons, it is highly recommended to change the adminstrator password after the camera has been configured properly.**

CAUTION: Make sure that you store information on user names and passwords in a secure place. If you loose the administrator password and cannot access the Admin menu, the password can only be reset at the factory. This service is not free!

1.8.2 Password for ISDN Dial-In

ISDN Dial-in
User: linux
Password: tux

Dialing into the camera via ISDN is protected by a separate password. When setting up a dial-in connection from a computer, you need to provide this information:

- User name is `linux`
- Password is `tux`

Enter the user name and password exactly as shown above. Note that both entries are case-sensitive.

1.8.3 Irreversibly Deactivating the Microphone

The microphone can be irreversibly deactivated!

Deactivating a camera's microphone may become necessary in order to protect the privacy of people at a workplace or for other reasons. You can permanently and **irreversibly** deactivate the microphone in the **Admin Menu > Loudspeaker and Microphone** dialog.

CAUTION: This deactivation is permanent and cannot be reversed even by MOBOTIX engineers. Deactivating the microphone will also deactivate all features that use the camera's microphone.

1.8.4 Starting the Camera Using the Factory IP Address

If the camera's IP address is not known any more, you can start the camera with its factory IP address. Section 3.6, *Starting the Camera Using the Factory IP Address*, describes this procedure in more detail.

1.8.5 Resetting the Camera to Factory Defaults

The configuration can also be reset partially

All settings of the MOBOTIX camera can be reset to the factory default settings. This makes sense if you have, for example, obtained a camera without any information or you would like to reset all settings after testing the camera. In order to perform this procedure, you need to have access to the administration area of the camera (**admins** group). Open **Admin Menu > Reset ...** to reset the camera to factory defaults.

Note: In contrast to the method described in section 3.6, *Starting the Camera Using the Factory IP Address*, **all users will be deleted** (except the **admin** user) when resetting the camera to factory defaults. Likewise, the **admin user's password will be reset**.

1.8.6 Activating Event Control for Security Applications

If the dotted rectangle in the live image is visible, the camera is armed

In its default configuration, the camera's event control and video motion detection features are **not enabled**. In order to activate event control as a whole, open **Setup Menu > General Event Settings** and activate the **Arming** switch or click on the **Arm & Record** softbutton of the browser interface. The video motion detection window is visible again (dotted frame in the center of the live image) and the camera stores images as soon as the video motion window detects movements.

1.8.7 Deactivating Text and Logo Options

As the camera arming has been deactivated in its default configuration (see preceding section), the MOBOTIX camera only displays the Text **WWW.MOBOTIX.COM**, the time stamp and the MOBOTIX logo at the top of the image. Once the camera arming has been activated, the text at the bottom of the live image (event, action and messaging symbols) will also appear.

Text and logos can be also deactivated or customized to your liking

If the camera is armed, you can deactivate the status text at the bottom and the text at the top left corner of the live image by setting **Text Display** in the **Setup Menu > Text & Display Settings** dialog to *Off*. Setting **Text Display** to *Date & Time* will only display the time stamp in the live image. In order to hide the logo in the live image, open **Admin Menu > Logo Profiles** and set **Logo Display** to *Disable*.

1.8.8 Deactivating the Daily Reboot of the Camera

Deactivating the camera reboot

Open **Admin Menu > Time Tasks** and deactivate or delete the *Reboot camera* task. This will prevent the camera from rebooting automatically.

1.8.9 ISDN Compatibility Note

This product is compatible with **Euro ISDN standard TBR3/TBR 3A1**.

Note: MOBOTIX offers special models for the Japanese market that support the Japanese ISDN standard. For additional information on this topic, see the Japanese section at **www.mobotix.com**.

1.8.10 Using Internet Browsers

Current Internet browsers (Internet Explorer, Netscape, Mozilla, Firefox, Safari, Konqueror, Opera, ...) with **JavaScript** enabled can show the camera's live images with their standard settings. Text-based browsers (e.g. `lynx`) cannot display the user interface and are *not* suitable for operating the camera.

Section 4.8, *Browser Settings*, in the *Software Manual* contains more information on browser compatibility. Chapter 13, *Troubleshooting*, contains more information on how to track and remove errors when operating the camera.

1.8.11 Cleaning Instructions – Cleaning the Lenses

If a lens is dirty from the installation process, clean the lens using a lint-free cotton cloth.

1.8.12 Safety Notes for Operating MOBOTIX Cameras

Electrical surges can be induced by other electrical appliances, improper wiring, but also from the outside (e.g. lightning strikes to phone or power lines).

MOBOTIX cameras are protected against small **electrical surges** by numerous measures. These measures, however, cannot prevent the camera from being damaged when stronger electrical surges occur.

Special care should be taken when installing the camera **outside of buildings** for **protection against lightning**, since this also protects the building and the whole network infrastructure.

MOBOTIX recommends having MOBOTIX cameras installed only by specialists accustomed to installing network devices and having proper respect for the pertinent regulations regarding lightning protection and **fire prevention** as well as the current technology for preventing damages from electrical surges.

Section 2.12, *Wiring, Fire Prevention, Lightning and Surge Protection*, contains more information on these topics.

1.8.13 Enlarged Dome for D12D-180° and D12M-CS

For the **D12D-180°** and the **D12M-CS**, an enlarged dome provides a better field of vision when looking horizontally with a camera that is mounted to a ceiling. Make sure that you always include the full model name of the camera when ordering the dome as a replacement part!

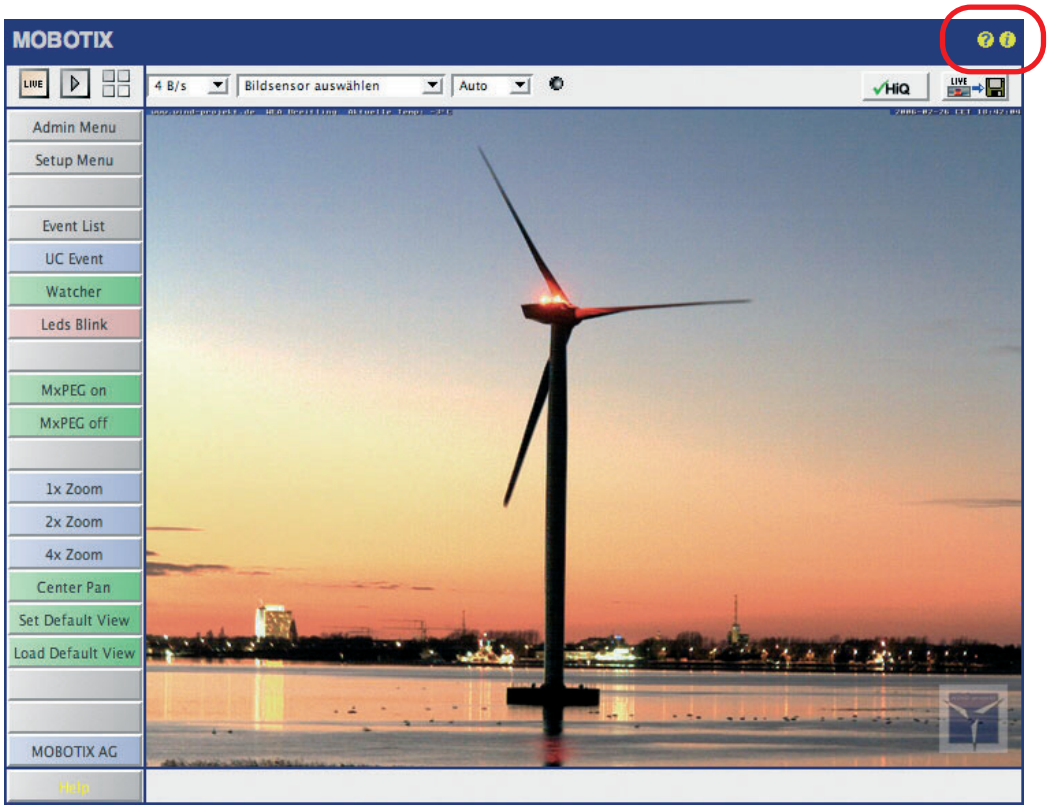
1.8.14 Additional Information

For more information on this topic, see the **News** and **Functional Overview** pages in the online help of the camera's browser interface. Click on the yellow icon in the top right corner to open the camera's online help.

Camera Help

In order to obtain more information on the camera and its current configuration, open the **Camera Status** dialog by clicking on the yellow icon in the top right corner of the camera's browser interface.

Camera status



Another source of information on all dialogs and parameters of the MOBOTIX camera is the **Reference Manual** that you can download from **www.mobotix.com**. The Reference Manual consists of the MOBOTIX camera's online help in one PDF file.

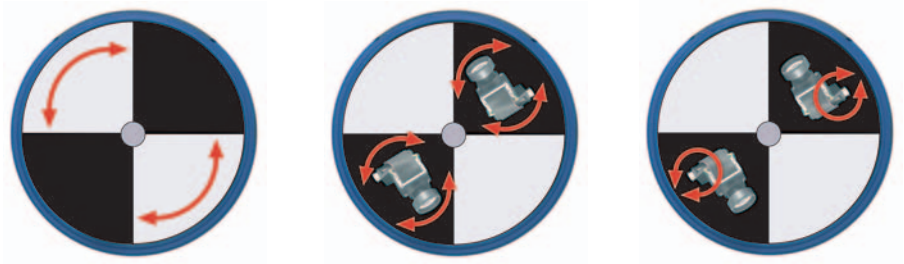
2 MOUNTING THE MOBOTIX D12

2.1 Overview of the Camera Variants

The **MOBOTIX D12** is offered in three variants:

- **D12D**: The **standard version** of the D12 can be used with all MOBOTIX lenses with M14 thread and is available with different combinations of image sensors for daylight (**color**) and night images (**black & white**; see section 2.5).
  Summary: Standard version for all MOBOTIX M14 lenses; almost no limitations when positioning the two image sensors.

D12 standard has freely positionable lens mounts



Available Q2/07

- **D12D-180°**: The **panorama** version of the D12 has a horizontal field of view of 180° (2 x 90° L22 Super Wide-Angle lenses) and delivers dual Mega images (max. 2560x960 pixels resolution, 960 lines). This camera is available as a daylight camera (**D12D-180°**, 2 x color image sensor) or a night camera (**D12D-Night-180°**, 2 x black & white image sensor).
  Summary: The panorama version with 2°x 90° L22, joined dual image and 180° horizontal field of view is the ideal camera for monitoring the façade of a building.

Façade surveillance with 2 x 90° L22 Super Wide-Angle

- **D12M-CS**: The **Mono-CS** version can be fitted with any **CS-Mount** lens (1" thread). This camera is available with a **CS-Mount** lens (24 - 54 mm) as a daylight camera (**D12M-CS**) or a night camera (**D12M-Night-CS**). Using C-Mount lenses is not possible in this camera.
  Summary: Variant for CS-Mount lenses.

Light-sensitive Vario CS-Mount lens with 24 - 54 mm focal length and f-stop 1.6 - 2.3

Available Q2/07

2.2 Directions

To facilitate mounting the camera, please follow the corresponding steps below:

Directions	
Preparatory Tasks	**Sections**
All camera versions	***2.3***: *Preparatory Steps*
Camera Version	**Sections**
D12D (Standard)	***2.4***: *Delivered Parts, Components and Dimensions (D12D Standard)* ***2.5***: *Installing the Lens Units (D12D Standard)*
D12D-180° (Panorama)	***2.6***: *Delivered Parts, Components and Dimensions (D12D-180°)*
D12M-CS	***2.7***: *Delivered Parts, Components and Dimensions (D12D-CS)*
Type of Installation	**Sections**
Indoor installation	***2.8.1***: *Mounting Indoor Cameras to a Wall or Ceiling* ***2.13***: *Finishing the Installation*
Outdoor installation with Wall Mount	***2.8.2***: *Mounting Outdoor Cameras to a Wall* ***2.9***: *Delivered Parts of the Outdoor Wall Mount* ***2.12***: *Mounting the Camera with the Outdoor Wall Mount* ***2.13***: *Finishing the Installation*
Installation on building corners or poles	***2.8.2***: *Mounting Outdoor Cameras to a Wall* ***2.8.3***: *Mounting Outdoor Cameras to a Pole* ***2.9***: *Delivered Parts of the Outdoor Wall Mount* ***2.10***: *Delivered Parts of the Corner and Pole Mount* ***2.11***: *Mounting the Corner and Pole Mount* ***2.12***: *Mounting the Camera with the Outdoor Wall Mount* ***2.13***: *Finishing the Installation*

2.3 Preparatory Steps

Before mounting the MOBOTIX D12 and (if required) the Outdoor Wall Mount (see sections 2.9 and 2.12), the following questions should be solved:

- **Which connections** should the camera use (network/ISDN/RS232)?
- Where should the camera be mounted and which area should the **PIR sensor** cover?
- How will you provide the camera **power supply** (PoE switch, inline using Network Power Adapter/Rack, external power supply)?
- How will the connections be provided **from within the building** (network, ISDN, RS232, power supply)?
- Which other **mounting options** (e.g. corner/pole mount) are required?

Make sure that you follow the instructions for mounting the camera to different surfaces (see section 2.16).

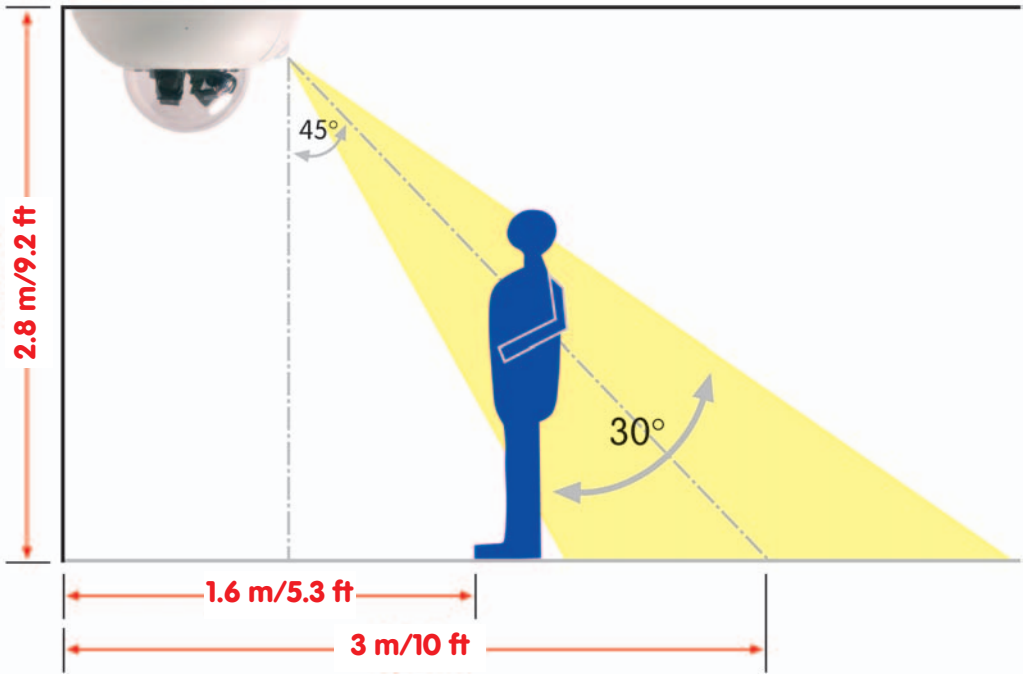
Note

In order to solve these and other questions, you should consult **shop.mobotix.com** for more information on the **MOBOTIX D12D**, the **D12D-Outdoor**, **D12D-180°** and the **D12M-CS** as well as the available accessories.

2.3.1 Mounting to a Ceiling

Caution: The screws should be at least 15 mm (5/8") longer than the dowels

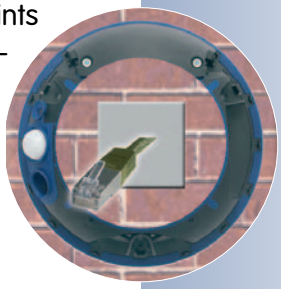
When mounting the camera to a ceiling, make sure that the PIR sensor points into the direction where it is most useful. The PIR sensor reaches about 10 meters (33 ft) and has a field of view of ±15°. **The cable outlet should be positioned so that it is directly behind the center of the camera housing**.



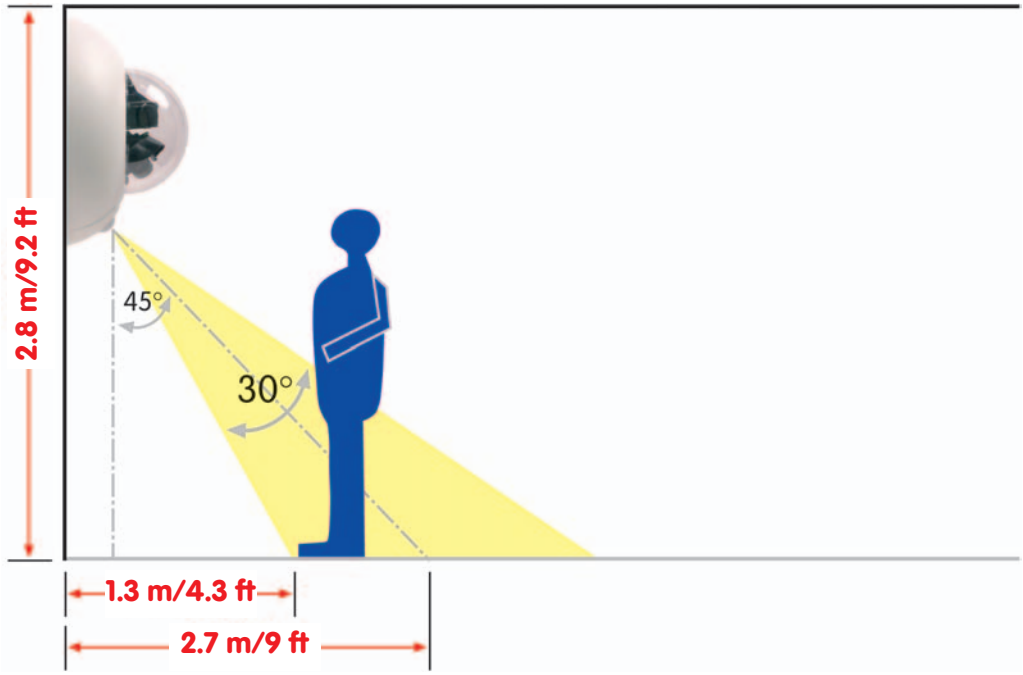
Use the supplied drilling template (*at the back of the manual*) to properly position the holes for the camera fixtures.

2.3.2 Mounting to a Wall

When mounting the camera to a wall, make sure that the PIR sensor points into the direction where it is most useful; usually, it should point downwards. **The wall outlet should be positioned so that it is directly behind the center of the camera housing**.



Use the supplied drilling template (*at the back of the manual*) to properly position the holes for the camera fixtures.



Note

The following is recommended for all D12 models used outdoors or indoors with high variations in temperature: cut the outer sealing with a sharp knife (as shown in the figure) to prevent condensation from accumulating.

The notch should be 3 mm wide (as wide as the Allen wrench) and should point downwards when the camera is mounted.

Caution: Notch for preventing damage from condensation

2.3.3 Deciding on the Connections (Network/ISDN/RS232

First, decide on which camera connections you would like to use.

Network is key

Always use the network, if possible

In general, you should always provide a **network connection**, if technically possible (a WiFi connection using a **bridge** or similar would also be acceptable), since a network connection brings a number of advantages:

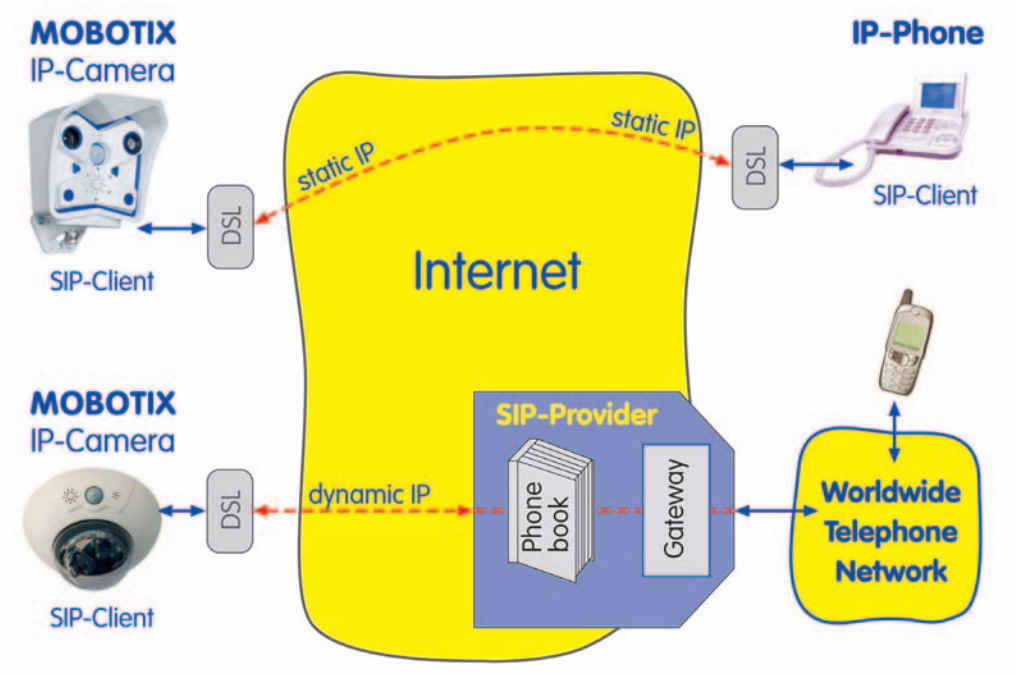
- The highest **frame rate** is only reached if the bandwidth is high enough; ISDN and GSM/GPRS will *not* suffice to deliver smooth video images.
- The camera's **external ring buffer** (storing the video/audio data on a file server) can only be used via a network connection.
- Compared to the **costs** of dial-up connections (ISDN, GSM/GPRS), the costs for file transfers and other accesses by and to the camera are reduced considerably when using a network that is already up and running.
- **Software updates** are best accomplished using a network connection, if dismounting the camera is not an option.

Free software updates

SIP telephony reduces costs

ISDN connection of MOBOTIX cameras is not required if the network permits SIP connections for Internet phone connections. Thanks to the **SIP capabilities of the MOBOTIX D12** (see chapter 9, *Telephony Features*, in the *Software Manual*), the camera can place voice calls (e.g. for alarm notification) via the network and can also accept incoming voice calls via Internet telephony. You can call the camera from a phone to obtain the time and date of the last event, for example.

Internet telephony



ISDN-only operation

When operating the camera only at the ISDN, you need to install an additional ISDN cable (see section 2.3.7, *Connecting Additional CAT5 Cables*), then attach the power supply using the pre-installed cable and the **NET/10BaseT** connector of the camera.

ISDN operation:
- Euro ISDN
- Japan
(USA not supported)

2.3.4 Selecting the Power Supply

Caution

In contrast to the MOBOTIX D10, it is not possible to use an ISDN NT and the S0 bus to supply power to the D12. Using the ISDN split cable and MOBOTIX PoE products (see section 2.17, *Optional Accessories*), the power can be injected into the ISDN data cable (8-wire cable required).

In order to reduce the amount of cabling, you should always use the Ethernet cable (**NET**) to inject power into the camera cabling (**Power over Ethernet**).

For smaller installations, the MOBOTIX **Network Power Adapter** *MX-NPA-3-RJ* and the universal **power supply** *MX-SNT-E/U/GB/J/AUS01-30-RJ* is sufficient. Larger installations would benefit from one or more MOBOTIX **Network Power Boxes/ Racks** that are available for supplying power to 4, 8 or 20 cameras (*MX-NPR-4*, *-8* or *-20*). See section 2.17, *Camera Accessories*, for more information on these and other items or open **`shop.mobotix.com`** (**Products > Accessories** section).

The D12 supports the MOBOTIX PoE products for power injection into the network cabling and the Power-over-Ethernet standard IEEE 802.3af

Network Power Adapter
MX-NPA-3-RJ

MX-NPA-3-RJ: Easy installation for smaller systems

Network Power Rack
MX-NPR-4

MX-NPR-4: For mounting in wiring cupboards; includes DIN rail clip

Netzwerk Power Rack
MX-NPR-20

MX-NPR-8/20: 19" rack mount (2 rack units)

Advantages of MOBOTIX PoE Products

- Zero maintenance and reliable without fans.
- Higher reliability of the system as a whole, since standard switches without PoE can be used (lower risk of failure).
- Easy installation on DIN rails using supplied adapter (*MX-NPR-4*) or in 19" racks (*MX-NPR-8/20*).

Since the MOBOTIX D12 supports **Power over Ethernet (IEEE 802.3af)**, you can also use PoE switches or routers for supplying power.

Section 3.3, *Connecting the Camera*, contains more information on the possible combinations of connections and power supply options.

PoE components without fans increase overall reliability of the entire system

Note

If you are using **Power over Ethernet (IEEE 802.3af) network components** for supplying power to the MOBOTIX D12, make sure that these components do not have a fan. Since the power consumption of MOBOTIX cameras is very low compared to other products, this increases the reliability of the entire system and expands the life cycle of these components.

2.3.5 Using Uninterruptible Power Supplies (UPS)

UPS not only protect the camera against power failures, they also protect network devices against damage from voltage peaks and low voltage

In order to maintain a continuous power supply even when utility power fails, you should install an uninterruptible power supply (UPS). These devices also provide full protection against electrical surges and voltage fluctuations and thus enhance the reliability of the system as a whole.

When using more powerful 19" rack-mounted USPs, you can also protect all other network components (e.g. switches, routers, PoE switches, etc.).

Since MOBOTIX cameras do not require any heating even in the wintertime, the power consumption of 3 W is quite low. This in turn means that you can centralize the USP-protected power supply by injecting power into the network cables (max. 100 m/300 ft.). This kind of protected power supply can be used either with MOBOTIX PoE products (MX-NPA-3-RJ + external power supply or MX-NPR-4/8/20) or with PoE-compliant switches according to IEEE 802.3af.

Typical setup of a 19" system with UPS

2.3.6 Providing the Connections (Network/ISDN/RS232)

Once the camera position, the position of the cable outlets, and the method of power supply have been decided upon, the cabling should be installed.

Before mounting the MOBOTIX D12, you should make sure that the network and ISDN connections are properly tested, so that the proper functioning of the camera is guaranteed.

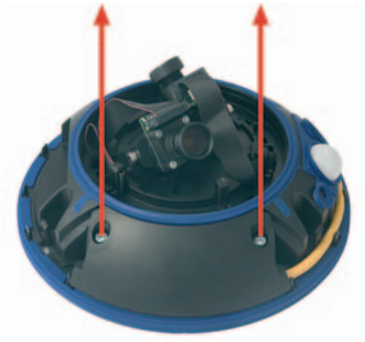
2.3.7 Connecting Additional CAT5 Cables

If the MOBOTIX D12 should use a **network (Ethernet)** and an **ISDN connection**, make sure to install a second CAT5 cable **(min. 50 cm/28 in for D12 only, 70 cm/28 in for D12 with outdoor wall mount)** and to guide it into the camera housing. In order to prevent confusing this cable with the pre-installed network cable, the second cable should have a different color (e.g. **green** as in the figure) and it should be clearly marked as ISDN cable.

- Remove the M4x25 Allen screws of the **cable cover (item 7)** using the supplied 3 mm Allen wrench and lift the cover out of its seat.

3mm Allen wrench is included in the delivery

Note: If the cable cover cannot be removed by hand, take a screwdriver to lift it out of its seat. Insert the screwdriver into the grooves shown below and gently lift the cable cover.

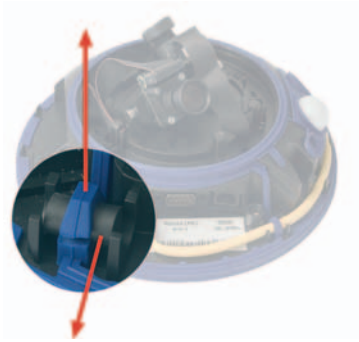


- Lead the CAT5 cable from the bottom of the camera housing through the right-hand opening and guide it around the camera housing in counterclockwise direction (as seen from above). Make sure that this cable is running properly as shown in the figures below.

Lead the cables through the cable guides at the outer rim of the housing

If you are only using one cable, close the unused cable guide with one of the supplied **rubber plugs**

- Remove the **rubber plug from the blue cable guide beneath the left side of the cable cover** and store the plug in a safe place.
  If you are only using one cable later on, close the unused cable guide again using this plug. This will ensure that the camera remains weatherproof (IP65), even if it has only one cable.



- Insert the cable into the cable guide.

Example:

Yellow: Network
Green: ISDN

- If you are using both connectors, the two cables should cross one another in front of the connectors.

Always mount the cable cover (IP65)!

- Push the **cable cover (item 7)** back into its seat and fasten the two Allen screws M4x25. When mounting the cable cover, take care to properly align the cover with the seal of the camera housing and the two cable guides. This will ensure that the camera remains weatherproof (IP65).

- Properly lead the cable through the **cable guides** at the outer rim of the housing and make sure that the outer shell can be properly mounted later on.

2.3.8 Connecting a Cable to the Serial interface (RS232)

Switching external relays using the RS232 interface

If the **RS232 interface** of the MOBOTIX D12 is to be used for switching external **relays** (lights, alarm sirens, gates, etc.), evaluating **external sensors** (light barriers, etc.) or for **data connections** (weather station, GSM/GPRS modem, etc.), you need to install an additional **serial cable** (similar to the steps in section 2.3.7, *Connecting Additional CAT5 Cables*) before installing the camera.

Due to the design of the camera, a suitably **short connector** should be used to ensure that the cable cover still fits perfectly without jeopardizing the weatherproofness of the camera.

Please also make sure that the serial cable is thick enough to fill the cable guide beneath the cable cover so that no water can enter the area beneath.

Section 3.8, *Signal Input/Output (RS232 Interface)*, contains more information on the RS232 interface (pin-out, etc.).

D12D Standard

Make sure to check the delivered parts!

2.4 Delivered Parts, Components and Dimensions (D12D Standard)

2.4.1 Delivered Parts and Components (D12D Standard)

Camera housing (item 1)
2 lens mounts (item 3)
2 lenses (item 2)
2 lock rings (item 4)
Allen wrench 3 mm (item 11)
Outer shell (item 9)
Dome (item 8), 1x transparent, 1x tinted
Custom tool with magnet (item 12)
Cable cover (item 7)
Ethernet cable (item 10)

Item	Count	Part Name
1	1	Camera housing
2	2	Lens
3	2	Lens mount
4	2	Lock ring
5	2	Ribbon cable
6	8	Cable clamp
7	1	Cable cover
8	2	Dome; 1x tinted, 1x transparent
9	1	Outer shell
10	1	Ethernet cable
11	1	Allen wrench 3 mm
12	1	Custom tool with magnet
15	3	Dowels 10 mm
16	3	Stainless steel washers Ø 9 mm
17	3	Stainless steel wood screws with hex head 8x70 mm

2.4.2 Camera Housing and Connectors (D12D Standard)

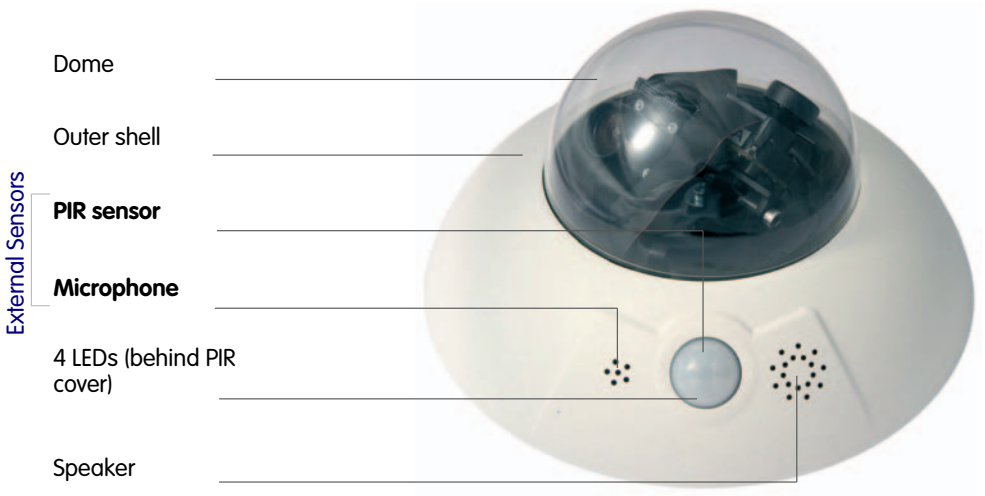
The MOBOTIX **D12D** consists of three main components (**camera housing (item 1)**, **outer shell (item 9)** and **dome (item 8)**). Like the MOBOTIX M12 models, the MOBOTIX **D12D** is also delivered with PIR sensor, microphone and speaker.

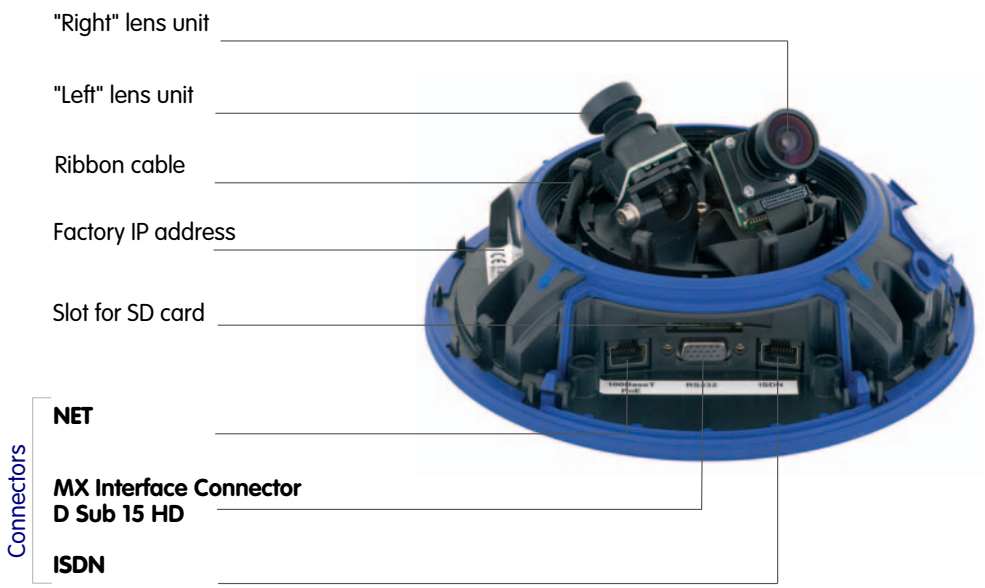
External Sensors

- PIR sensor
- Microphone

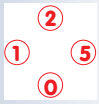
Connectors

- NET (Ethernet network) / power supply
- In/Out / RS232 / MX Interface Connector D Sub 15 HD
- ISDN
- Slot for SD card





Signals of the camera LEDs:



0 Power

1 Image processing/Event

2 Ethernet

5 Image processing/Event

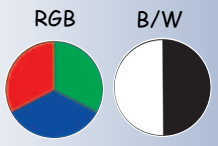
MOBOTIX D12D

2.4.3 Dimensions of the D12D Standard

Notes:

2.5 Installing the Lens Units (D12D Standard)

The standard models of the MOBOTIX D12 are delivered with a pre-mounted dome. **Lens units (lens mount, image sensor and lens) are delivered separately** and need to be installed as described in the following:



Designation of the lens units

The ribbon cables for connecting the image sensors are marked by the letters **L** (left) and **R** (right). Depending on the type of sensor used, the sensors (mounted on the lens units) are marked either by the ◑ icon (BW, black & white) or the icon (RGB, color).

The **following combinations of ribbon cables** (**L**, **R**) **and sensors** (**color**, **black & white**) are possible:

Possible image sensor combinations for the MOBOTIX D12D (Standard)

Image Sensor Combination	Ribbon cable L	Ribbon cable R
Color/Color		
Color/Black & White		
Black & White/Black & White		

Notes

Make sure that you only use the combinations of sensors and ribbon cables listed in the table!

When setting up the camera, the installed combination of image sensors has to be set in the camera's user interface. This is done either automatically in the **Quick Installation** wizard or manually by opening the **Admin Menu > Image Sensor Configuration** dialog (see section 3.2, *Overview of the Configuration Settings*).

(1) Remove the dome

Take a cotton cloth and remove the transparent dome by turning it in **counter-clockwise direction**.

Dismount the dome by turning it **counter-clockwise**

(2) Insert the lens units and mount the central lens screw

Remove the center lock screw and the washer. Insert the lens units into the seatings. Insert the lock screw with a washer into the center of the camera and gently tighten it to hold the lens units in place.

Caution: Avoid over-tightening the screw as this might damage the camera housing.

(3) Connect the ribbon cables to the lens units

Connect the ribbon cables marked **L** and **R** according to the *Image Sensor Combination* table (opposite page) to the installed lens units.

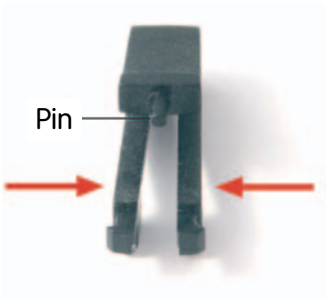
Example: A **D12D-Night** **always** takes the **L** ribbon cable on the ◑ (BW) lens mount, the **R** ribbon cable is **always** connected to the ◔ (color) lens mount (see *Image Sensor Combination* table on the opposite page).

While doing so, make sure that the **lens unit's ribbon cable connectors are always pointing upwards into the dome**. This will ensure that the lenses can be positioned freely later on, without putting any strain on the ribbon cables. Make sure that the ribbon cables are running properly along the inside of the dome's rim. The ribbon cables must not obstruct the line of vision of the lenses!

(4) Secure the ribbon cables using the cable clamps

To do so, gently squeeze the clamps between your fingers and insert the clamps into their seats along the inside of the dome's rim. Make sure that the pin of each clamp is properly positioned in the corresponding hole of the camera housing.

Press clamp together cautiously, then insert into the seats; make sure the pin fits snug into the hole!

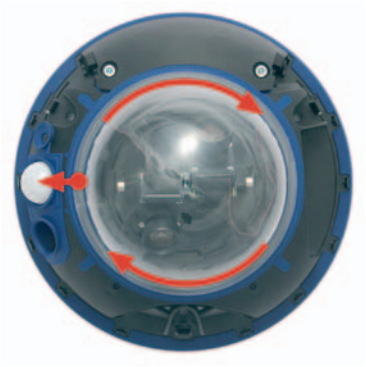


(5) Mount the dome

Take a cotton cloth, **insert the dome into the housing with the mark pointing towards the camera's PIR sensor** and tighten the dome in **clockwise direction**. This will prevent accidental repositioning of the lenses through the rest of the mounting process.

Align the **mark** of the dome with the PIR sensor

Tighten the dome by turning **clockwise**



Important: Always insert the dome into the housing with the mark of the dome pointing towards the camera's PIR sensor, in order to preserve the camera's weatherproofness!

Note: The camera comes with an additional tinted dome!

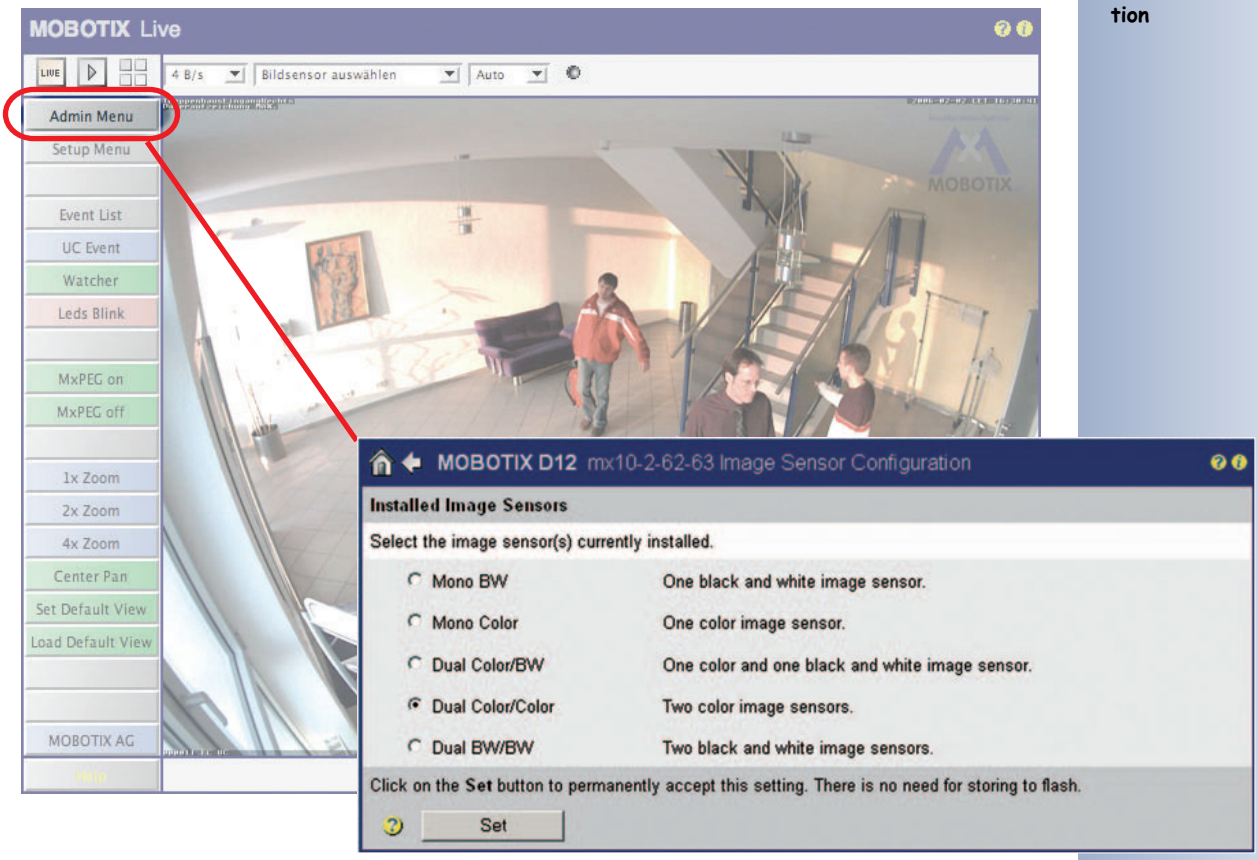
(6) Adjust the lenses and install the outer shell

For additional information on this topic, see section 2.13, *Finishing the Installation*.

2.5.1 Activating the Camera Configuration in the Quick Installation Wizard

Configuring the image sensors
Admin Menu > Quick Installation or **Admin Menu > Image Sensor Configuration**

Since the D12D can be ordered with different sensor configurations (**color/color**, **color/black & white**, **black & white/black & white**), you need to set the installed sensor combination in the camera user interface. This is done either automatically in the **Quick Installation** wizard or manually by opening the **Admin Menu > Image Sensor Configuration** dialog.



For additional information on this topic, see section 3.2, *Overview of the Configuration Settings*.

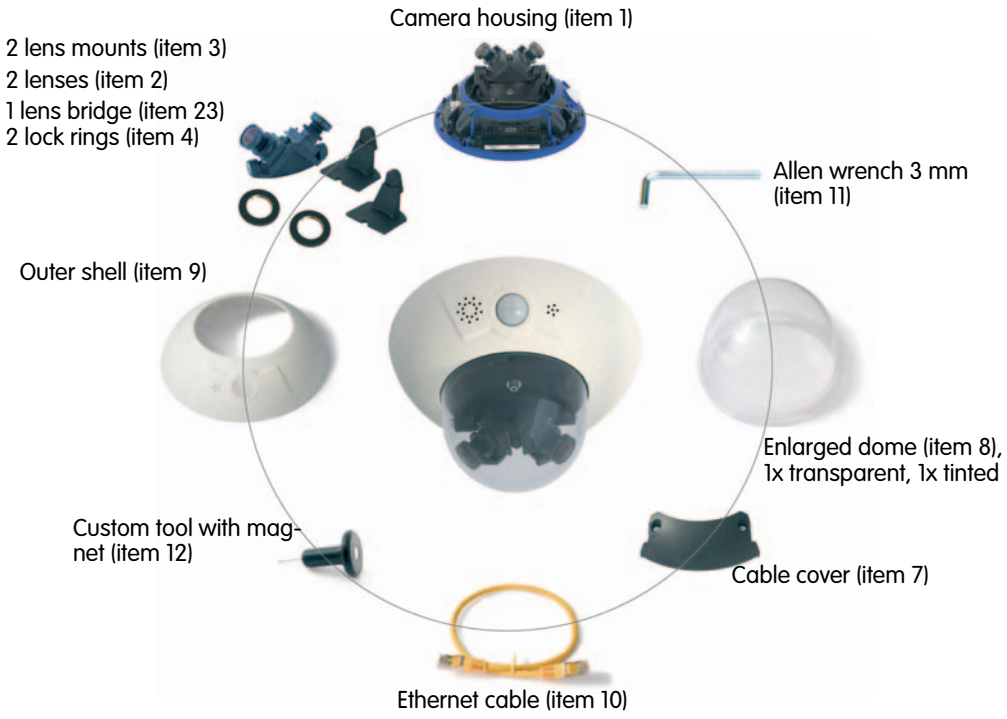
D12D-180°

Make sure to check the delivered parts!

Available Q2/07

2.6 Delivered Parts, Components and Dimensions (D12D-180°)

2.6.1 Delivered Parts and Components (D12D-180°)


Camera housing (item 1)
2 lens mounts (item 3)
2 lenses (item 2)
1 lens bridge (item 23)
2 lock rings (item 4)
Allen wrench 3 mm (item 11)
Outer shell (item 9)
Enlarged dome (item 8), 1x transparent, 1x tinted
Custom tool with magnet (item 12)
Cable cover (item 7)
Ethernet cable (item 10)

Item	Count	Part Name
1	1	Camera housing
2	2	Lens
3	2	Lens mount
4	2	Lock ring
5	2	Ribbon cable
6	8	Cable clamp
7	1	Cable cover
8	2	Enlarged dome; 1x tinted, 1x transparent
9	1	Outer shell
10	1	Ethernet cable
11	1	Allen wrench 3 mm
12	1	Custom tool with magnet
15	3	Dowels 10 mm
16	3	Stainless steel washers Ø 9 mm
17	3	Stainless steel wood screws with hex head 8x70 mm
19	2	Stainless steel Allen screws M4x10 mm
22	2	Stainless steel washers Ø 4.3 mm
23	1	Lens bridge

2.6.2 Camera Housing and Connectors (D12D-180°)

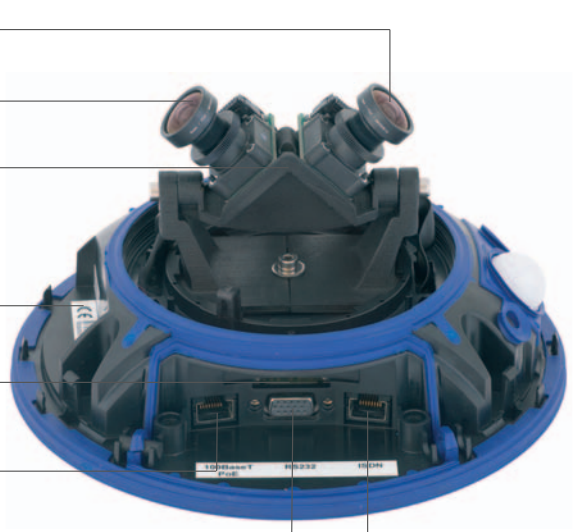
The MOBOTIX **D12D-180°** consists of three main components (**camera housing (item 1)**, **outer shell (item 9)** and **dome (item 8)**). Like the MOBOTIX M12 models, the MOBOTIX **D12D-180°** is also delivered with PIR sensor, microphone and speaker.

External Sensors

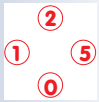
- PIR sensor
- Microphone

Connectors

- NET (Ethernet network) / power supply
- In/Out / RS232 / MX Interface Connector D Sub 15 HD
- ISDN
- Slot for SD card



Signals of the camera LEDs:



0 Power

1 Image processing/Event

2 Ethernet

5 Image processing/Event

MOBOTIX D12D-180°

2.6.3 Dimensions of the D12D-180°

Notes:

D12-CS

Make sure to check the delivered parts!

Available Q2/07

2.7 Delivered Parts, Components and Dimensions (D12M-CS)

2.7.1 Delivered Parts and Components (D12M-CS)

Camera housing (item 1)
2 lens mounts (item 3)
2 lenses (item 2)
1 lens bridge (item 23)
2 lock rings (item 4)
Allen wrench 3 mm (item 11)
Outer shell (item 9)
Enlarged dome (item 8), 1x transparent, 1x tinted
Custom tool with magnet (item 12)
Cable cover (item 7)
Ethernet cable (item 10)

Item	Count	Part Name
1	1	Camera housing
2	1	Lens
3	2	Lens mount
4	2	Lock ring
5	2	Ribbon cable
6	8	Cable clamp
7	1	Cable cover
8	2	Enlarged dome; 1x tinted, 1x transparent
9	1	Outer shell
10	1	Ethernet cable
11	1	Allen wrench 3 mm
12	1	Custom tool with magnet
15	3	Dowels 10 mm
16	3	Stainless steel washers Ø 9 mm
17	3	Stainless steel wood screws with hex head 8x70 mm
19	2	Stainless steel Allen screws M4x10 mm
22	2	Stainless steel washers Ø 4.3 mm
23	1	Lens bridge

2.7.2 Camera Housing and Connectors (D12M-CS)

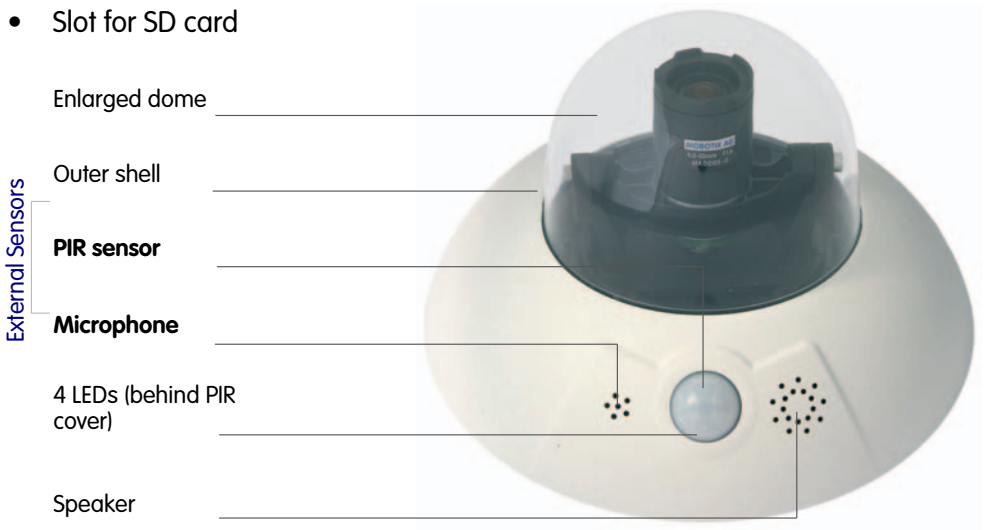
The MOBOTIX **D12M-CS** consists of three main components (**camera housing (item 1)**, **outer shell (item 9)** and **dome (item 8)**). Like the MOBOTIX M12 models, the MOBOTIX **D12M-CS** is also delivered with PIR sensor, microphone and speaker.

External Sensors

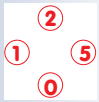
- PIR sensor
- Microphone

Connectors

- NET (Ethernet network) / power supply
- In/Out / RS232 / MX Interface Connector D Sub 15 HD
- ISDN
- Slot for SD card



Signals of the camera LEDs:

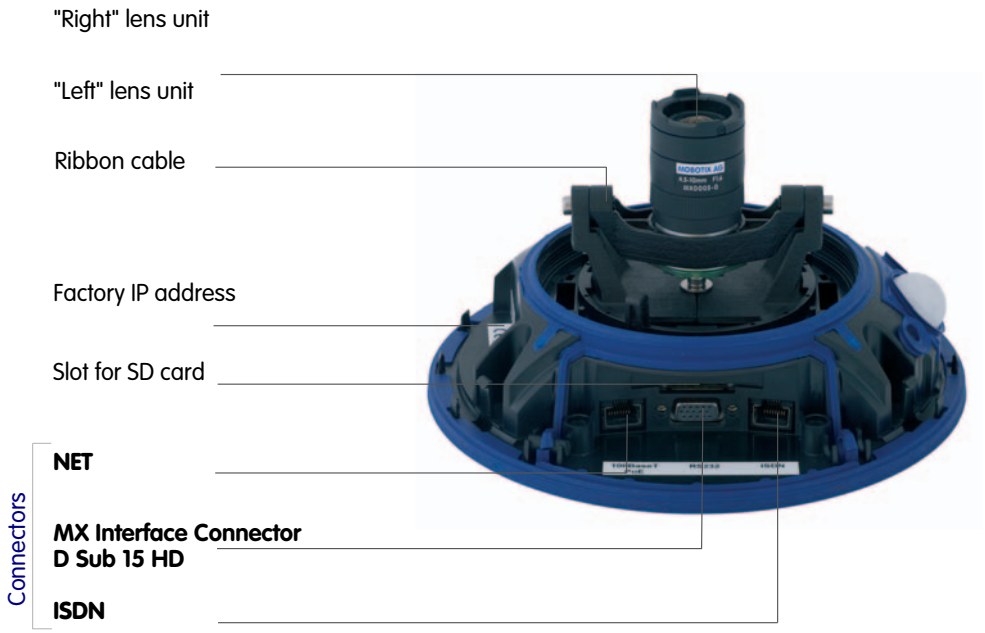


0 Power

1 Image processing/Event

2 Ethernet

5 Image processing/Event



MOBOTIX D12M-CS

2.7.3 Dimensions of the D12M-CS

Notes:

2.8 Indoor/Outdoor Mounting Instructions

2.8.1 Mounting Indoor Cameras to a Wall or Ceiling

In order to mount the MOBOTIX D12 to a ceiling or wall, you need to drill the holes for the fixtures. Use the supplied *drilling template* to mark the position of the holes for the fixtures and the holes through which the cables will be led later on. **Remember to position the drilling template according to the direction of the camera's PIR sensor.**

Find the folded drilling templates at the end of the manual!

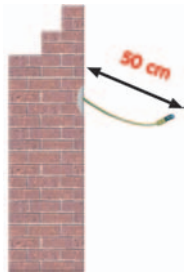
Make sure that the drilling template is not scaled down when printing!

Planning and Connecting the CAT 5 Cable

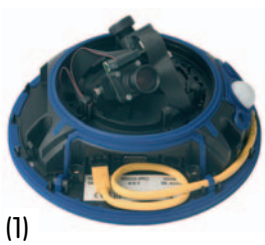
(1) Position the camera housing over the cable exit.
(2) Lead the cables through the appropriate holes in the housing.
(3) Properly lead the cable(s) through the cable guides at the outer rim of the housing.
(4) Use the proper screws to mount the camera housing to the wall or ceiling.

Note

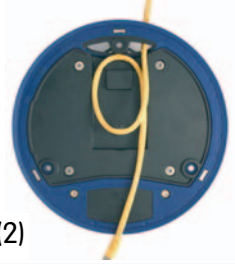
Make sure that the **cable length** is appropriate. Check the following figure to see how the cables are running properly. Cable length should be **50 cm (20 in)** when mounting the D12 and **80 cm (28 in)** when mounting the D112 with Outdoor wall mount, always measured from the wall. There are two ways to accommodate cable that is too long (see figures):



(1) Loop near the RJ45 connectors
(2) Loop beneath the camera



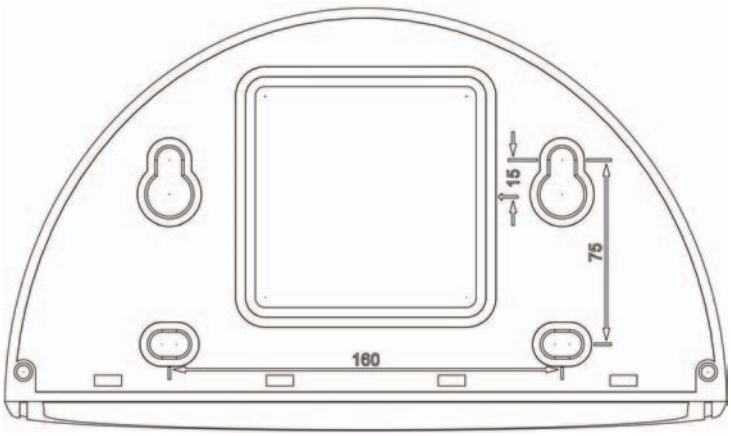
(1)



(2)

2.8.2 Mounting Outdoor Cameras to a Wall

In conjunction with the **Outdoor Wall Mount**, the D12 can be mounted outside for enhanced outdoor surveillance. When mounted to the outdoor wall mount, the MOBOTIX D12 reaches protection class **IP65** (absolutely dustproof, resistant against water jets). Operating temperatures may vary between -30°C and +60°C (-22°F to 140°F), making it the ideal camera for the most demanding weather situations. In order to mount the MOBOTIX D12 with the Outdoor Wall Mount, you need to prepare the holes for the fixtures. Use the supplied *drilling template* to mark the position of the holes for the fixtures and the holes through which the cables will be led later on.

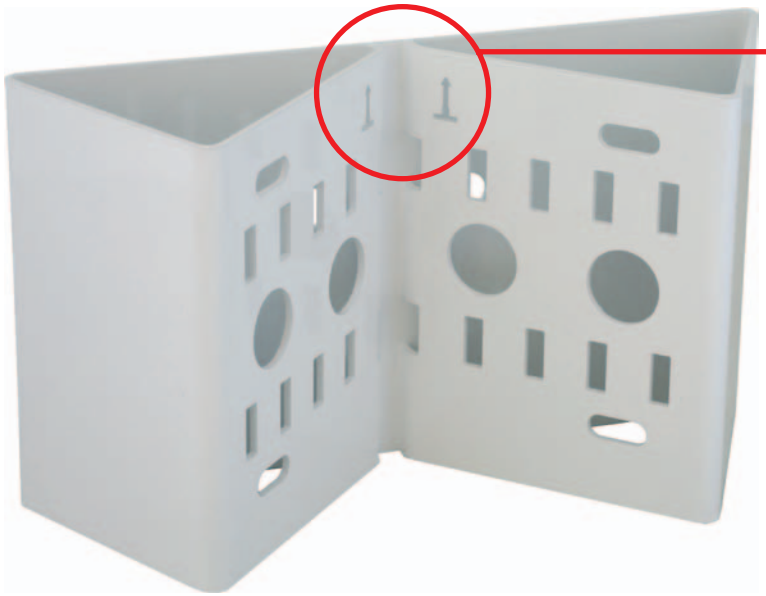


Find the folded drilling templates at the end of the manual!

Make sure that the drilling template is not scaled down when printing!

2.8.3 Mounting Outdoor Cameras to a Wall or Pole

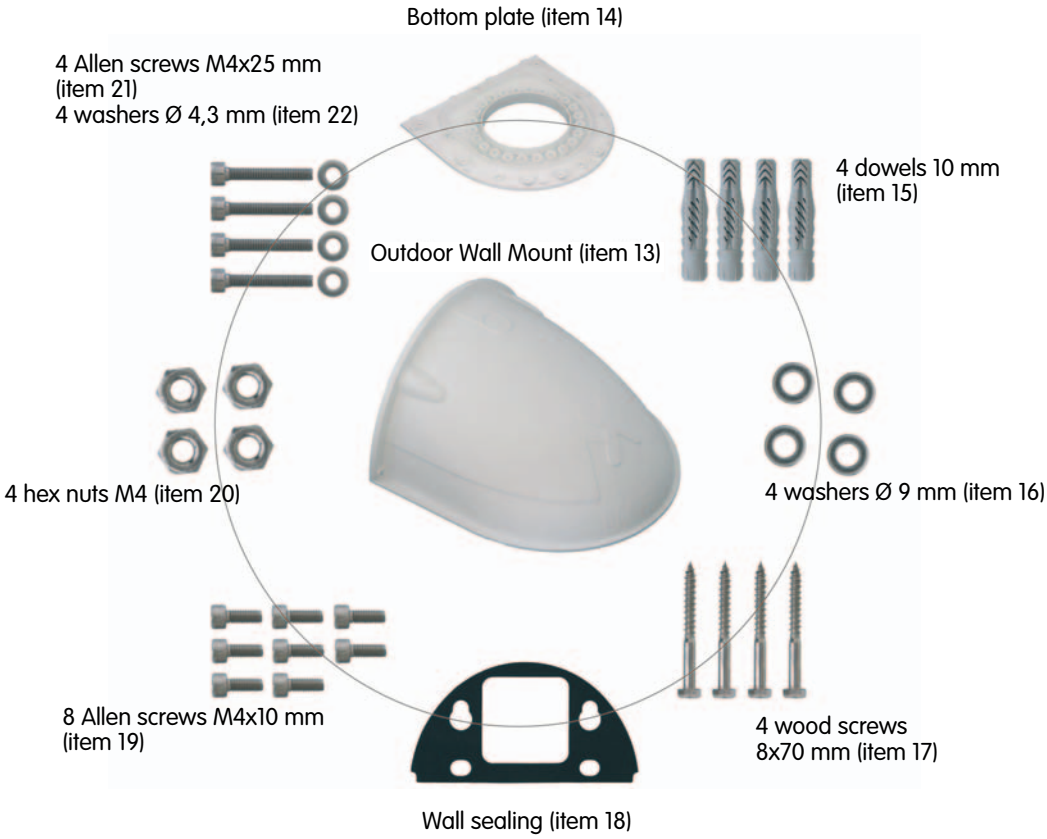
If you would like to mount the MOBOTIX D12 to the corner of a building or a pole, you should consider using the **MOBOTIX Corner and Pole Mount**. The Corner and Pole Mount can be used only together with the Outdoor Wall Mount. The supplied stainless steel straps allow fixing the mount to poles with diameters between **60 and 180 mm (2.4 to 7.1 in)**.



Make sure arrows are pointing upwards when mounting!

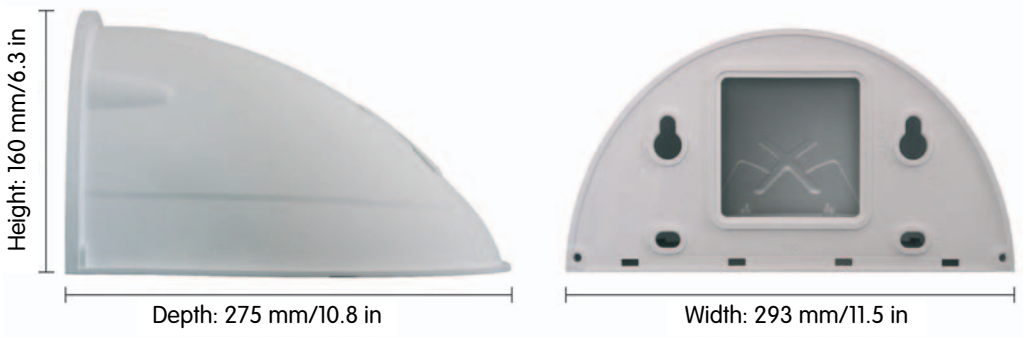
2.9 Delivered Parts of the Outdoor Wall Mount (Optional Accessory)

Make sure to check the delivered parts!

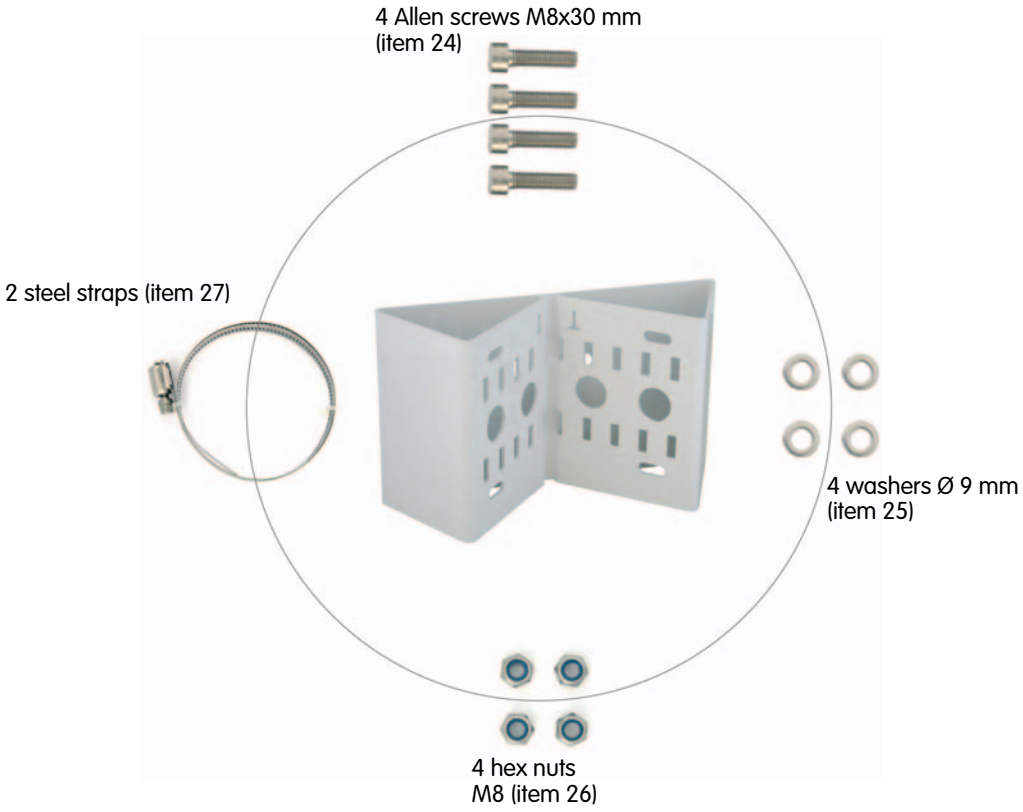

Bottom plate (item 14)
4 Allen screws M4x25 mm (item 21)
4 washers Ø 4,3 mm (item 22)
4 dowels 10 mm (item 15)
Outdoor Wall Mount (item 13)
4 hex nuts M4 (item 20)
4 washers Ø 9 mm (item 16)
8 Allen screws M4x10 mm (item 19)
4 wood screws 8x70 mm (item 17)
Wall sealing (item 18)

Item	Count	Part Name
13	1	Outdoor wall mount
14	1	Bottom plate
15	4	Dowels 10 mm
16	4	Stainless steel washers Ø 9 mm
17	4	Stainless steel wood screws with hex head 8x70 mm
18	1	Wall sealing
19	8	Stainless steel Allen screws M4x10 mm
20	4	Stainless steel hex nuts M4
21	4	Stainless steel Allen screws M4x25 mm
22	4	Stainless steel washers Ø 4.3 mm

The rectangular hole in the rear covers the wall outlet



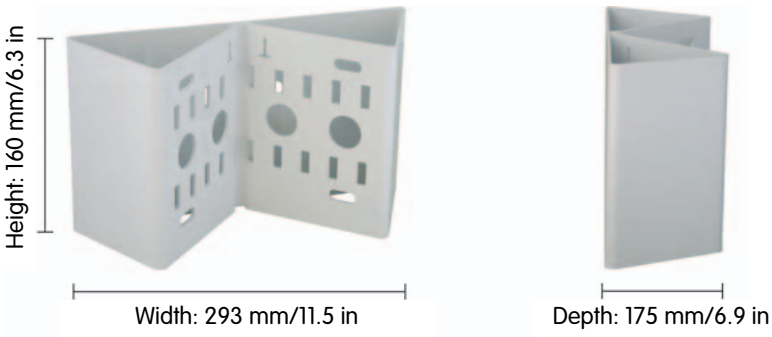
2.10 Delivered Parts of the Corner and Pole Mount (Optional Accessory)



Robust and maintenance-free:
Corner and Pole Mount made of 3 mm stainless steel

D12 accessory for easily mounting to corners or poles

Item	Count	Part Name
24	4	Stainless steel Allen screws M8x30 mm
25	4	Stainless steel washers Ø 9 mm
26	4	Stainless steel lock nuts M8
27	2	Stainless steel straps



2.11 Mounting the Corner and Pole Mount

If you would like to mount the MOBOTIX D12 to the corner of a building or a pole, you should consider using the **MOBOTIX Corner and Pole Mount**. This mount is made of **3 mm powder-coated stainless steel (white)** and has been designed specifically for the **Outdoor Wall Mount**. The supplied stainless steel straps allow fixing the mount to poles with diameters between **60 and 180 mm (2.4 to 7.1 in)**.

By design, the Corner and Pole Mount does *not* allow using a wall outlet for the camera cabling.

Mounted to a corner

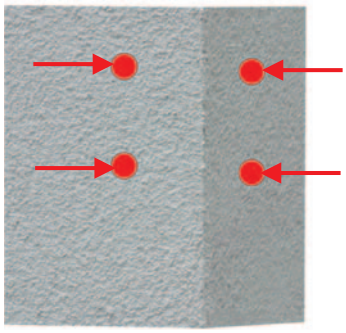
Like the Outdoor Wall Mount, the Corner and Pole Mount is made from weather-proof material and is just as robust and maintenance-free.

Mounted to a pole

2.11.1 Mounting to the Corner of a Building

Use the **dowels, screws and washers supplied with the Outdoor Wall Mount** (see section 2.9, *Delivered Parts of the Outdoor Wall Mount*) to mount the Outdoor Wall Mount to the corner of a building.

- Mark the **four holes for dowels** at the corner (make sure that the arrows in the mount point to the top) and drill the holes using a 10 mm (3/8 in) drill bit for walls.



Make sure arrows are pointing upwards when mounting!

Make sure not to squeeze and damage the cables when mounting!

- Guide the **camera cables** through one of the large round holes at the back of the Corner and Pole Mount, then through one of the holes with 16 mm (5/8 in) diameter. In order to properly **protect the cabling**, you should let the cabling run from the inside of the building through the Corner and Pole Mount directly into the camera.
  Note: The cable to the camera should be running at least 80 cm (30 in) outside of the corner!

- Insert the **supplied 10 mm dowels (item 15)** into the dowel holes, then mount the Corner and Pole Mount to the corner of the building using the **8x70 mm screws (item 17)** and **9 mm dia. washers (item 16)**.

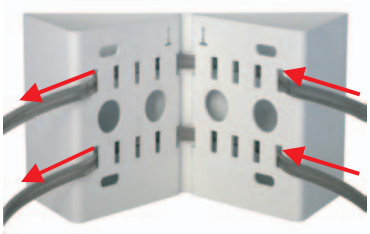
Next, mount the **Outdoor Wall Mount** to the **Corner and Pole Mount**, as described in section 2.11.3, *Mounting the Outdoor Wall Mount to the Corner and Pole Mount*.

2.11.2 Mounting to a Pole

Use the **stainless steel straps supplied with the Corner and Pole Mount** for affixing the pole mount to a pole.

Pole diameter can be 60 to 180 mm/2.4 to 7.1 in

- Guide the stainless **steel straps (item 27)** through the holes in the pole mount (see figure). Make sure that you are using the slots of the mount which are fitting best for the thickness of the pole. The stainless steel straps allow attaching the mount to **poles with diameters between 60 and 180 mm (2.4 to 7.1 in)**.



- Guide the **camera cables** from behind through one of the large round holes of the Corner and Pole Mount. In order to properly **protect the cabling**, you should let the cabling run from the inside of the pole through the Corner and Pole Mount directly into the camera.
  Note: The cable to the camera should be running at least 80 cm (32 in) outside of the pole!

- **Firmly tighten the screws of the stainless steel straps.** If required, clip the ends of the stainless steel straps.

Next, mount the **Outdoor Wall Mount** to the **Corner and Pole Mount**, as described in section 2.11.3, *Mounting the Outdoor Wall Mount to the Corner and Pole Mount*.

2.11.3 Mounting the Outdoor Wall Mount to the Corner and Pole Mount

Use the **stainless steel screws, washers and hex nuts supplied with the Corner and Pole Mount** for affixing the Outdoor Wall Mount to the Corner and Pole Mount already in place.

- Lead the cables through the appropriate hole at the back of the Outdoor Wall Mount.

- Use the **Allen crews M8x35 mm (item 24)**, **washers dia. 9 mm (item 25)** and **nuts M8 (item 26) supplied with the Corner and Pole Mount** to attach the Outdoor Wall Mount to the Corner and Pole Mount.

Next, mount the **camera to the Outdoor Wall Mount**, as described in section 2.12.3, *Determining the Position of the Camera on the Bottom Plate*.

D12 with Outdoor wall mount

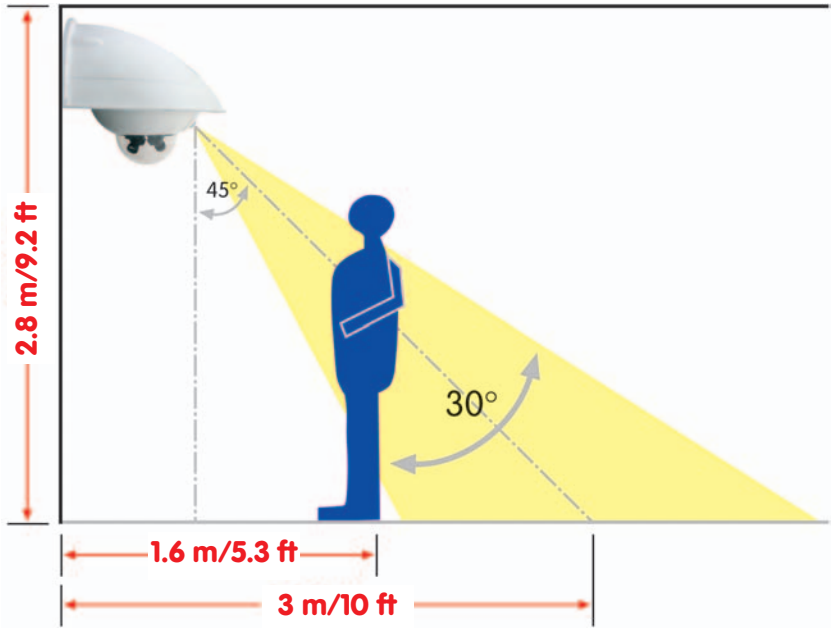
2.12 Mounting the Camera With the Outdoor Wall Mount

2.12.1 Setting the Direction of the Passive Infrared Sensor (PIR)

When mounting the camera, make sure that the PIR sensor points into the direction where it is most useful. The PIR sensor reaches about **10 meters (33 ft)** and has a **field of view of ±15°**.

The positions that are available depend on how high the MOBOTIX D12D-Outdoor has been mounted and the position of the camera on the **bottom plate (item 2)**, which can be adjusted in steps of 15 degrees (see also section 2.12.3, *Determining the Position of the Camera on the Bottom Plate*).

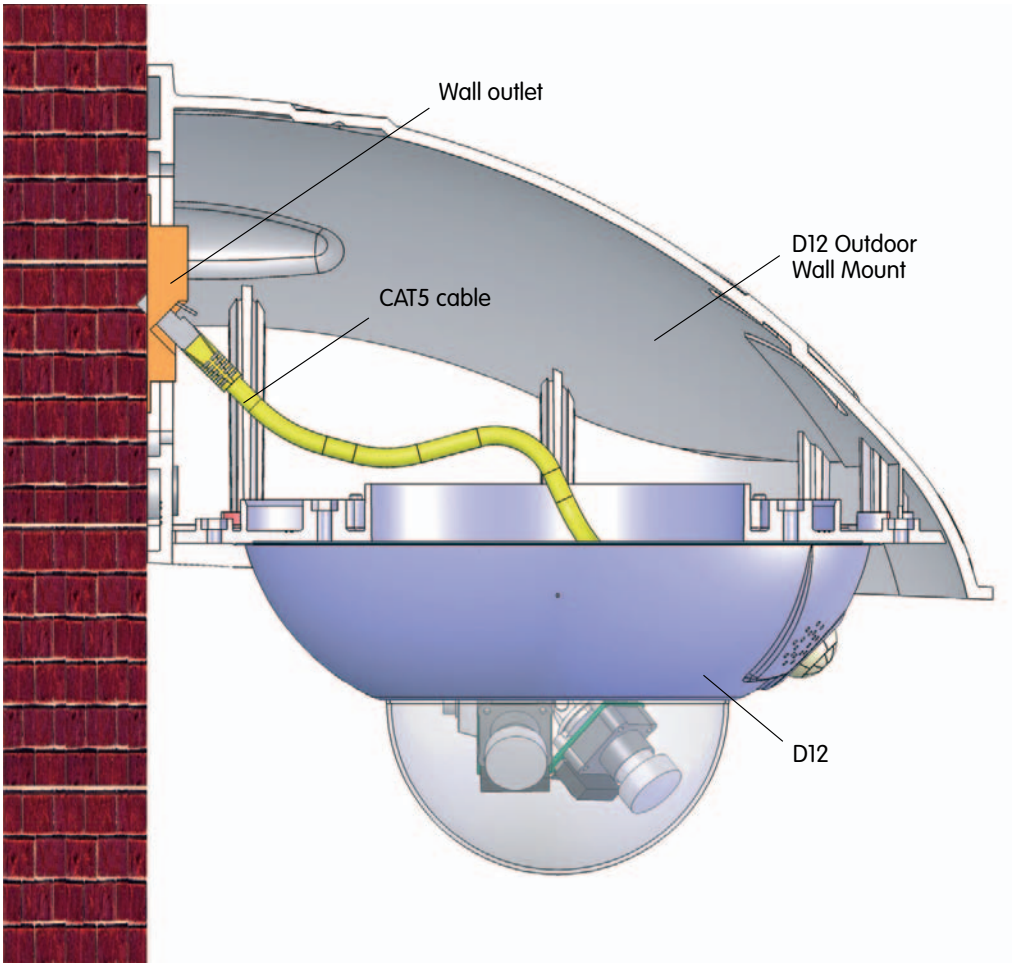
PIR specs:
range approx. 10 m (30 ft), field of view approx. ±15°



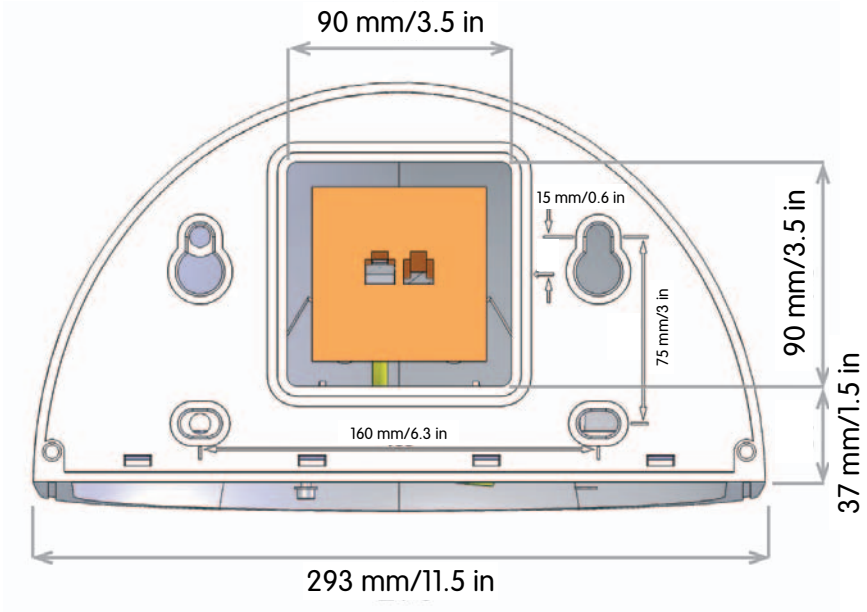
Hint: It may be useful to mark the ideal position of the PIR sensor on the bottom plate with a pencil.

2.12.2 Mounting the Outdoor Wall Mount

Ideally, the Outdoor Wall Mount is mounted over the tested wall outlet, which provides the connections (network, ISDN, Power over Ethernet) to the camera.



Mounting the Outdoor Wall Mount and the Camera



Find the folded drilling templates at the end of the manual!

Make sure that the drilling template is not scaled down when printing!

Use the **supplied drilling template** (at the end of this manual) to mark the position for drilling the dowel holes and the holes through which the cables will be led later on. When printing or copying the drilling template, make sure that it is not scaled down!

- Use the supplied **10 mm dowels (item 15), 8x70 mm screws (item 17) and 9 mm dia. washers (item 16)** for mounting the Outdoor Wall Mount to the wall!

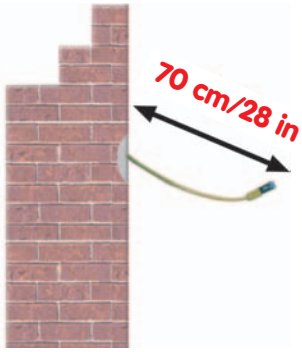
Apply silicone sealant!

- Before mounting the wall mount, attach the supplied **wall sealing (item 18)** to its rear (wall) side using some silicone sealant. If the outdoor wall mount is mounted to a very rough surface, the top of the wall mount should also be sealed against the wall using good-quality **silicone sealant**.

- The rectangular opening at the wall mount's rear side is supposed to cover the wall outlet.

Cable length from wall: min. 70 cm (28 in), min. 80 cm (32 in) when using the Corner and Pole Mount

- If you *do not* use the pre-installed Ethernet cable, make sure that the **cable runs at least 70 cm (28 in)** from the wall or wall outlet (**80 cm (32 in)** when using the Corner and Pole Mount, see section 2.11).



2.12.3 Determining the Position of the Camera on the Bottom Plate

Once the outdoor wall mount has been mounted to the wall or pole, the camera can be mounted to the underside of the **bottom plate (item 14)**. The **bottom plate** closes off the outdoor wall mount from below and also holds the camera.

The upper side of the bottom plate has 24 holes for the **M4 stainless steel hex nuts (item 20)**; it is thus possible to mount the camera in increments of 15 degrees. In order to facilitate the mounting process, all holes have numbers from 1 to 8.

The bottom plate closes off the outdoor wall mount from below and also holds the camera

Three **standard positions** are identified as described below:

- PIR sensor of the camera looks straight **ahead**: Use the holes marked by the number **1** for the **M4 hex nuts (item 20)**.

PIR looking straight ahead: 1

- PIR sensor of the camera looks to the **right**: Use the holes marked by the number **3** for the **M4 hex nuts (item 20)**.

PIR looking to the right: 3

- PIR sensor of the camera looks to the **left**: Use the holes marked by the number **7** for the **M4 hex nuts (item 20)**.

PIR looking to the left: 7

2.12.4 Mounting the Camera on the Bottom Plate

In order to mount the camera to the bottom plate, use three of the supplied **Allen screws M4x25 mm (item 21)**, three **washers Ø 4,3 mm (item 22)** and the corresponding hex nuts.

Caution

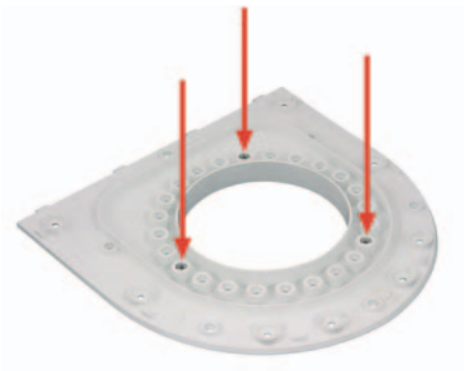
When fastening the Allen screws using the 3 mm Allen wrench, make sure that you do not scratch the camera dome!

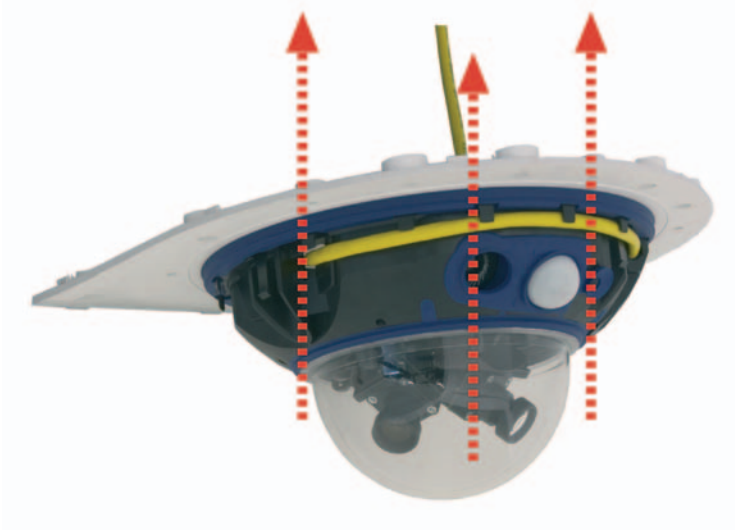
- Guide the **connector cables of the camera** from below (smooth side) through the round opening of the bottom plate (item 14).

Mount the camera housing to the bottom plate *before* mounting the bottom plate itself

- Position the camera on the underside of the bottom plate so that the PIR sensor points in the desired direction and the hole in the housing to the right of the PIR sensor is situated above a hole in the bottom plate.
- Insert the **first M4 hex nut (item 20)** into the corresponding hole of the bottom plate, then use one **Allen screw M4x25 mm (item 21)** and a **washer Ø 4.3 mm (item 22)** and *lightly* fasten the screw.
- Turn the bottom plate around and determine the number next to the hex nut you just inserted (example: PIR points straight ahead → hole should have the number 1). Insert the remaining **M4 hex nuts (item 20)** into the other holes with the same number (1 in this case) and use the two **Allen screws M4x25 mm (item 21)** with the corresponding washers to mount the camera to the bottom plate.

PIR sensor of the camera looks straight ahead: **Position 1**





Mounting the camera on the bottom plate

- **Make sure** that you have properly fastened the three **Allen screws M4x25 mm (item 21)**.

2.12.5 Connecting the Camera and Mounting the Bottom Plate

- Plug the **camera connector cables** into the appropriate wall outlets or adapters.
- Insert the **(straight) wall side of the bottom plate** into the back of the wall mount as shown in the figure.

Pushing the bottom plate into the Outdoor Wall Mount

- Push the front of the bottom plate upwards.
- **Mount** the bottom plate to the wall mount (**eight Allen screws M4x10 mm; item 19**) and make sure the screws are all properly fastened.

2.13 Finishing the Installation

2.13.1 Establishing a Connection to the Camera

Establish a connection to the camera as described in section 3.1.2, *Establishing a Connection to the Camera*.

2.13.2 Adjusting the Lenses, Visual Check

Make sure that you see the live image of the camera on the monitor of your computer or laptop. Now adjust the lenses one by one until you see the desired image area on your monitor:

- Remove the camera **dome** using a lint-free cotton cloth.
- Release the lens' **lock ring**, adjust the **image focus** and tighten the lock ring again.
- Make sure that the lenses' ribbon cables are properly secured.
- Make sure that the **cable clamps** are properly seated. This will prevent the cable clamps from falling into the dome and obscuring parts of the image once the camera has been mounted.

Caution (only applies to tele lenses)

Image Focus: Due to the lens effect of the dome, the focus of the tele lens is shifting slightly once the dome has been mounted.

Before mounting the dome, the tele lens should be turned about **90° in clockwise direction** (as seen from the lens' front).

Make sure that you check the focus of the live image in your browser with the dome installed and re-adjust the lens, if required.

- **Mount the dome** again using the cotton cloth and finally check the focus of both lenses on the monitor.

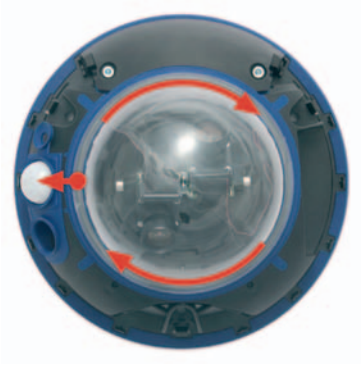
2.13.3 Mounting the Dome and the Camera's Outer Shell

Once the wall mount and the camera have been mounted, it's time to mount the **dome**:

- Take a cotton cloth and mount the dome onto the camera by turning it in **clockwise direction**. This will prevent you from accidentally repositioning the lenses through the rest of the mounting process.

  Important: Position the mark of the dome pointing towards the camera's PIR sensor and gently seat the dome into the threads. This will prevent misaligning the threads of the dome!

  Note: The camera is delivered with an additional tinted dome with reduced transparency!



Lock ring secures lenses against vibrations

Next, install the camera's **outer shell**:

- Only mount the outer shell if you have finished setting the lenses' focus and mounted the camera dome.
- Hold the outer shell so that the round hole of the shell is positioned over the PIR sensor of the camera. Gently press the shell into the shell's seats in the camera housing.

Lenses are adjusted manually

Tighten the dome by turning clockwise

Caution

The MOBOTIX D12D-Outdoor is only **weatherproof** if the camera housing has been mounted tightly to the bottom plate and both the camera dome and the outer shell are properly seated.

2.14 Dismantling the Camera

Start dismantling the camera by removing the outer shell of the D12. For removing the outer shell of the D12, you need the supplied custom tool; for dismounting the dome, a lint-free cotton cloth is required (see section 2.15, *Cleaning Instructions*).

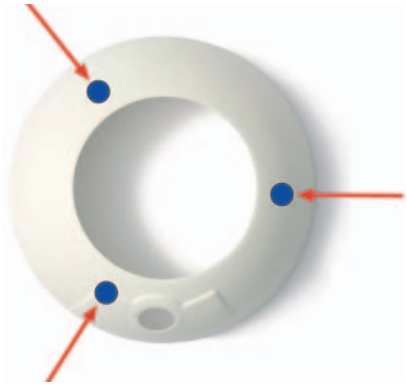
Tighten the dome by turning **clockwise**

Align the **mark** of the dome with the PIR sensor

(1) Remove the outer shell

For security reasons, the outer shell can only be removed using the supplied custom tool. Proceed as shown in the figure below:

- Remove the outer shell using the supplied custom tool. Insert the tip of the custom tool into the three small holes of the shell, one by one. Gently lift the shell near each hole to loosen the shell.
- Remove the outer shell from the camera.



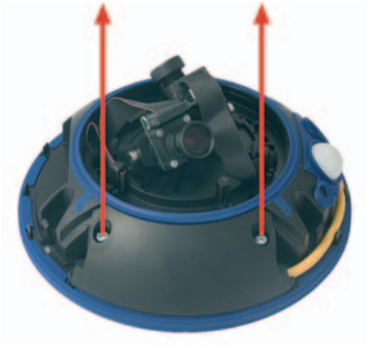
Custom tool

The outer shell snaps into its seats at the camera housing by pressing gently down on the ring

Dismount the outer shell using the supplied custom tool (see section 2.14, *Dismantling the Camera*).

(2) Remove the cable cover

Remove the 4 mm Allen screws of the cable cover and remove the cover.



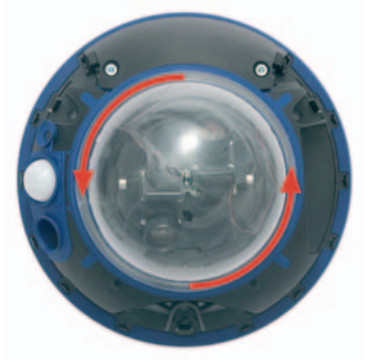
Note: If the cable cover cannot be removed by hand, take a screwdriver to lift it out of its seat. Insert the screwdriver into the grooves shown below and gently lift the cable cover.

(3) Remove the Ethernet and ISDN cables

Remove the cables one by one by gently pressing down the lock and pulling each cable out of its socket. Now take the cables out of the cable guides at the bottom of the housing and remove them through the appropriate holes in the housing. **Take care to avoid any damage to the cable guides at the bottom of the camera housing** (see *figure*).

(4) Remove the dome

Take a cotton cloth and remove the transparent dome by turning it in **counter-clockwise direction**.

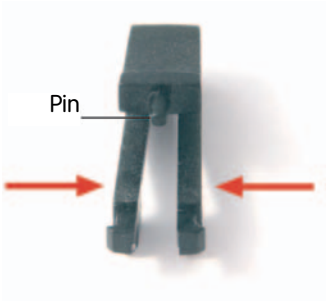


For **security reasons**, the outer shell can only be removed using the supplied custom tool

3 mm Allen wrench is included in the delivery

(5) Remove the cable clamps in the dome's interior

Gently press the sides of the cable clamps and lift the clamps from their seats.



(6) Remove the lens connectors

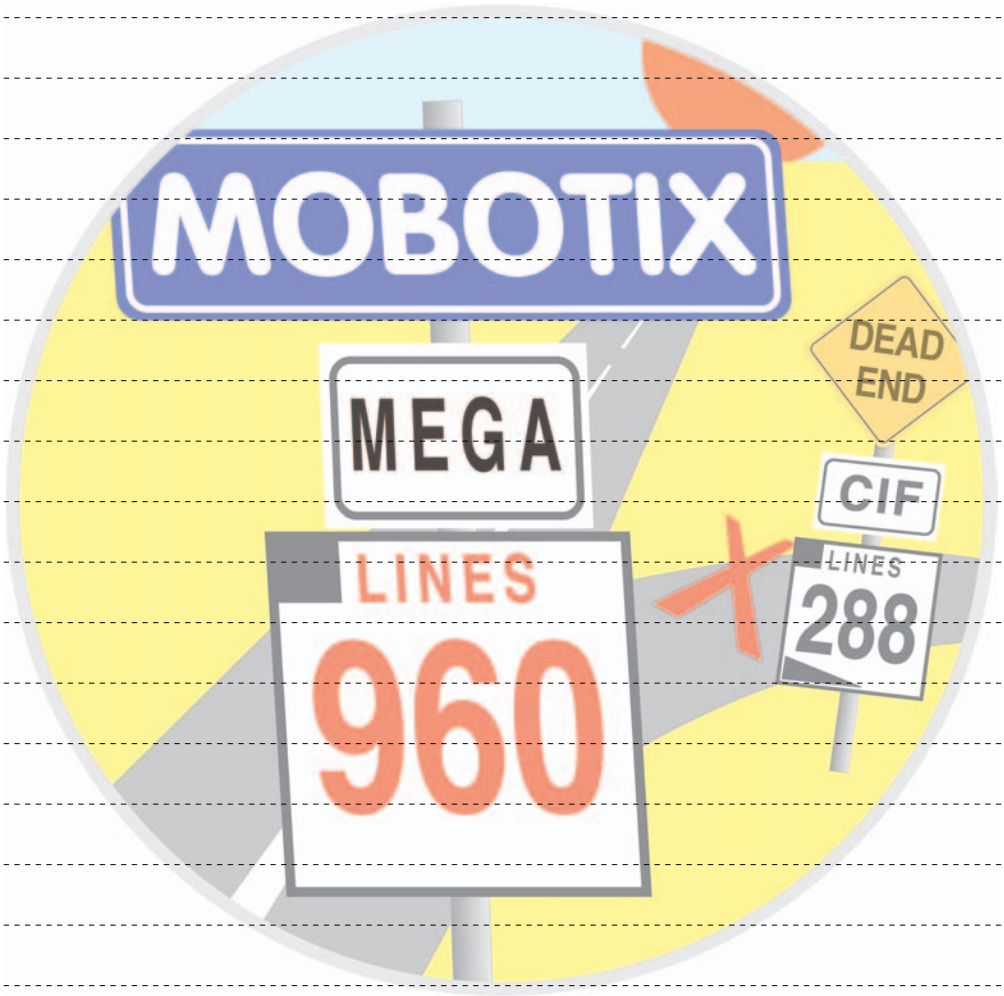
Press the clamps on the side of each ribbon cable connector, then gently pull the connectors from the lens' pin header.

Dismount the dome by turning it **counter-clockwise**

(7) Remove the central lens screw and the lens units

Remove the central lens screw using the supplied 3 mm Allen wrench. Lift the lens units out of their seats.

Notes:



2.15 Mounting the Camera

- Copy or print the **drilling template** for the SecureFlex mount at the back of the manual (make sure *not to scale* the template).
- Mark the holes; when using a **wall outlet**, make sure that the outlet lines up with the upper rim of the mount so that the cable is not bent too sharply later on.
- Drill the **holes** and insert the supplied dowels (this is usually not necessary for a wooden wall or structure that is thick enough). Make sure to follow the instructions in section 2.14, *Mounting the Camera to Different Surfaces*.
- Connect the **cables** (see section 2.12, *Preparing the Installation*).
- Properly fasten the SecureFlex mount using the supplied screws and the appropriate washers to the wall. Make sure to follow the instructions in section 2.14, *Mounting the Camera to Different Surfaces*.
- Establish a **connection** from your computer to the camera (see chapter 3, *Operating the Camera*) and adjust the camera position according to the **live image** delivered by the camera.
- Properly tighten the screws of the mount itself and make sure that all screws are properly fastened, then press the supplied caps onto the heads of the hex screws.

Max. torque for all Allen screws: 4 Nm (2.95 lbf ft)

Find the folded drilling template at the end of the manual!

All measurements in mm!

Caution

Never use screws with countersunk heads to fasten the mount, as these screws will destroy the mount.

2.16 Mounting the Camera to Different Surfaces

Note

Mounting the camera outdoors:

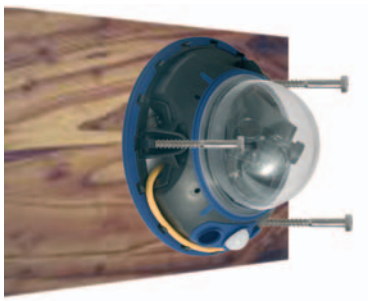
When using a **wall outlet for an outdoors installation**, you should use silicone sealant to prevent water from entering the wall outlet and the cabling by sealing off the mount's base against the wall.

Wall thickness:

Make sure that the wall is at least five centimeters (2") thick if you intend to use the supplied dowels and screws.

2.16.1 Mounting to a Wooden Wall or Surface

Use the supplied materials and suitable tools for mounting the camera to a wooden wall or surface. Follow the *Mounting Instructions* below to complete the installation.



Use the supplied wood screws without dowels, if you are mounting the camera to a thick wooden wall or structure. If the wooden wall or surface is too thin or if concrete or brick is behind the wood, you should also use the supplied dowels for mounting. Make sure that you know how thick the wooden wall or surface is, before you start drilling the holes. Please also follow the instructions in the following sections.

Required Materials:

- 3 hex head screws (Pos. 17)
- 3 washers (Pos. 16)

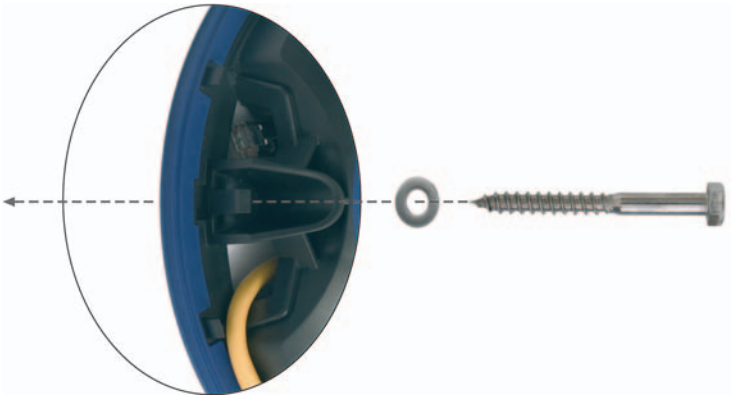
Required Tools:

- Wrench or ratchet for M6 hex heads
- Allen wrench 5 mm (item 3)
- Possibly power drill and drill bit for pre-drilling

Mounting Instructions:

- Slide a washer (item 5) over every hex head screw (item 6).
- Press the camera against the wooden wall or surface.
- Insert the screws (with washers) into the openings in the foot of the camera.
- Tighten the screws using the wrench or ratchet (max. torque is 4 Nm/ 2.95 lbf ft).

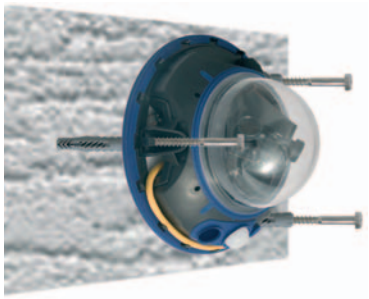
Max. torque for all screws: 4 Nm (2.95 lbf ft)



2.16.2 Mounting to a Drywall

Use the supplied materials and suitable tools for mounting the camera to a drywall. Follow the *Mounting Instructions* below to complete the installation.

Required Materials:



- 3 hex head screws (Pos. 17)
- 3 washers (Pos. 16)
- 3 dowels (Pos. 15)

Required Tools:

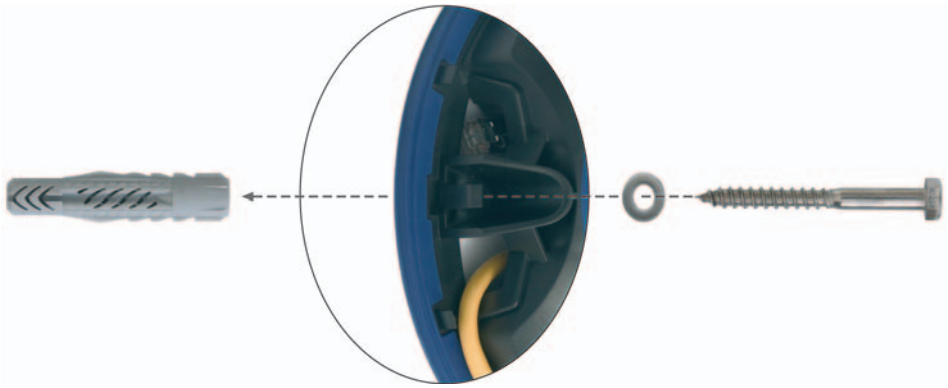
- Power drill
- Suitable drill bit
- Hammer (optional)
- Wrench or ratchet for M6 hex heads
- Allen wrench 5 mm (item 3)

Mounting Instructions:

- Hold the drilling template at the position where you would like to mount the camera.
- Mark the holes for drilling with a pencil or a sharp object, then remove the drilling template.
- Drill the holes with the power drill where you just marked.
- Insert a dowel into each of the holes you just drilled. If required, use the hammer to press the dowels into the holes.
- Slide a washer (item 5) over every hex head screw (item 6).
- Hold the camera against the wall. Make sure that the openings in the mount's foot line up with the dowels.
- Insert the screws (with washers) into the openings in the foot of the camera and into the dowels.
- Tighten the screws using the wrench or ratchet (max. torque is 4 Nm/ 2.95 lbf ft).

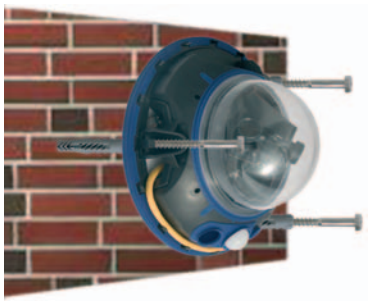
Find the drilling template at the end of the manual

Max. torque for all screws: 4 Nm (2.95 lbf ft)



2.16.3 Mounting to a Concrete or Brick Wall

Use the supplied materials and suitable tools for mounting the camera to a concrete or brick wall. Follow the *Mounting Instructions* below to complete the installation.



Required Materials:

- 3 hex head screws (Pos. 17)
- 3 washers (Pos. 16)
- 3 dowels (Pos. 15)

Required Tools:

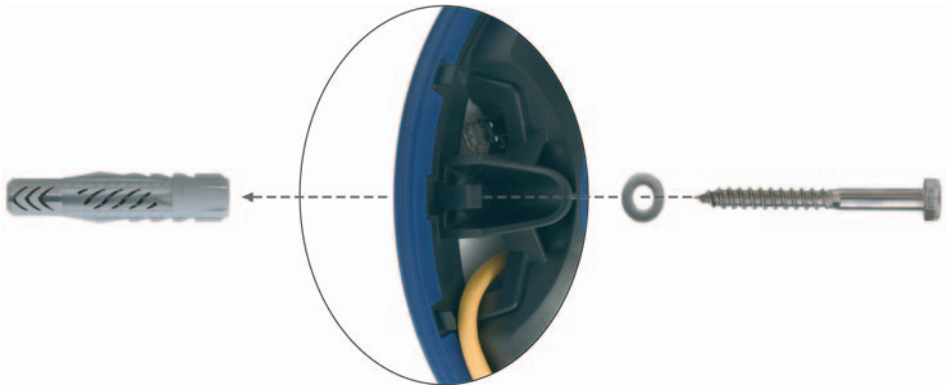
- Power drill
- Suitable drill bit
- Wrench or ratchet for M6 hex heads
- Hammer (optional)
- Allen wrench 5 mm (item 3)

Mounting Instructions:

Find the drilling template at the end of the manual

- Hold the drilling template at the position where you would like to mount the camera.
- Mark the holes for drilling with a pencil or a sharp object, then remove the drilling template.
- Drill the holes with the power drill where you just marked.
- Insert a dowel into each of the holes you just drilled. If required, use the hammer to press the dowels into the holes.
- Slide a washer (item 5) over every hex head screw (item 6).
- Hold the camera against the wall. Make sure that the openings in the mount's foot line up with the dowels.
- Insert the four screws (with washers) into the openings in the foot of the camera and into the dowels.
- Tighten the screws using the wrench or ratchet (max. torque is 4 Nm/ 2.95 lbf ft).

Max. torque for all screws: 4 Nm (2.95 lbf ft)



2.16.4 After Mounting the Camera

Controlling the image position and the focus

- Remove the dome using a lint-free cotton cloth or the supplied plastic protection.
- Loosen the screw in the center of the camera using the supplied Allen wrench (item 3) so that you can easily turn and tilt the sensor units.
- Display the camera images on a computer monitor, then turn and tilt the sensor units until you have found the best position.
- Tighten the screws at the turn/tilt joints of the SecureFlex mount using the Allen wrench (max. 4 Nm/2.95 lbf ft) to make sure that the position of the camera remains as set.
- If required, clean the lens' surfaces using a clean, lint-free cotton cloth.
- Check the image focus (tele lens L135 only) and the camera position on the computer monitor. Please also see section 2.16, *Adjusting the Tele Lens Focus*.
- Mount the dome again using a lint-free cotton cloth or the supplied plastic protection. Make sure that you insert the dome into the housing with the mark of the dome pointing towards the camera's PIR sensor, in order to preserve the camera's weatherproofness!

Max. torque for all screws: 4 Nm (2.95 lbf ft)

2.17 Cleaning Instructions

2.17.1 Cleaning the Dome

- In order to protect the dome from being scratched and from getting dirty, only handle the dome using a soft cotton cloth or the protective plastic of the camera's shipping box.
- You should clean the dome at regular intervals. Always use a lint-free cotton cloth for this purpose.
- If the dirt is more persistent, add a mild alcohol-free detergent without abrasive particles.
- Make sure you instruct cleaning personnel on how to clean the camera.

2.17.2 Cleaning the Lenses

- If the lenses are dirty from the installation process, clean the lenses using a lint-free cotton cloth. Make sure that the lens is still in focus after cleaning and adjust the lens' focus if required.

2.18 Wiring, Fire Prevention, Lightning and Surge Protection

When installing the wiring in or out of buildings, make sure you always adhere to the relevant regulations on wiring, fire prevention and protection against lightnings.

MOBOTIX recommends having MOBOTIX cameras installed only by certified specialists accustomed to installing network devices and having proper respect for the applicable regulations regarding lightning protection and **fire prevention** as well as the current technology for preventing damages from electrical surges.

Find more information at an institution such as the **International Electrotechnical Commission** (IEC, **www.iec.ch**) or at a manufacturer of protection devices against lightning and electrical surges, such as Dehn (**www.dehn.de**).

2.18.1 Wiring

When installing the wiring, make sure you follow these guidelines:

- **Data cable:** Make sure you only use double-shielded CAT 5/7 cable (**S/STP**) for Ethernet connections. If the power is supplied on a data cable using the Network Power Adapter or similar means, the same applies to the ISDN cable (see section 3.3, *Connecting the Camera*).
- **Outdoors:** Installing the camera outdoors requires special precautions and measures regarding the cables as well as lightning and surge protection (see section 2.16.3, *Lightning and Surge Protection*).
- **Wire lengths:** The cable segments must not exceed the maximum allowed cable lengths in order to ensure proper data transfer (see section 3.3, *Connecting the Camera*).

- **Avoid induction:** When running data cables parallel to existing regular power lines or high-voltage wires, make sure you observe the minimum distances to the power cables.

2.18.2 Fire Prevention

When installing the power lines to the camera, make sure you always adhere to the relevant regulations on wiring and fire prevention at the site of the installation.

2.18.3 Lightning and Surge Protection

To prevent damage from lightnings and surges, make sure you follow these guidelines:

- **Lightning conductors:** In areas exposed to lightning (e.g. on roofs), a distance holder (1 m/3 ft. higher, 1 m/3 ft. away from the camera) and proper lightning conductors need to be installed in order to prevent lightning strikes into the camera and to ensure that the energy of a lightning strike is properly led to the ground.
- **Surge protection:** Make sure you have installed proper protection against electrical surges in order to prevent damage to the camera, the building and the network infrastructure. This includes surge protectors for 19" racks, adding an uninterruptible power supply (UPS) to the MOBOTIX camera, and installing surge arresters or similar for routers, switches, servers, etc.

2.19 Optional Accessories

Power supply (MX-SNT-E/U/GB/J/AUS01-30-RJ)

Not required if network components are used that support the PoE (Power over Ethernet) standard IEEE 802.3af!

The MOBOTIX power supply is required if you do not use a **Network Power Box** or **Network Power Rack** (see below), or a PoE-compatible switch or router.

Network Power Adapter (MX-NPA-3-RJ)

Power supply for smaller systems

The Network Power Adapter allows injecting the power supply for the MOBOTIX camera into the network cable. It thus allows using a single cable for connecting to the camera and for remotely supplying power (up to 100 m/300 ft). The Network Power Adapter is required, if you are using the universal power supply and the SecureFlex mount, and power is not supplied using a PoE-compliant switch/router or a MOBOTIX Network Power Box/Rack.

Network Power Box for up to 4 Cameras (MX-NPR-4)

Intelligent and robust power supply thanks to DIN rail installation

The MX-NPR-4 allows supplying power to up to four MOBOTIX cameras via the network cable. The NPR-4 thus replaces four separate power supplies and four Network Power Adapters. The Network Power Box delivery includes a (detachable) clip at the back, which simply clicks onto DIN rails.

Network Power Rack for 8/20 Cameras (MX-NPR-8/20)

Zero maintenance and reliable as these devices do not require fans

The MX-NPR-8/MX-NPR-20 allow supplying power to up to 8/20 MOBOTIX cameras, respectively, via the network cable. These NPRs thus replace 8/20 separate power supplies and the same number of Network Power Adapters; they are easily mounted in 19" racks (2 rack units).

Advantages of MOBOTIX PoE Products

- Zero maintenance and reliable without fans.
- Higher reliability of the system as a whole, since standard switches without PoE can be used (lower risk of failure).
- Easy installation on DIN rails (*MX-NPR-4*) or in 19" racks (*MX-NPR-8/20*).

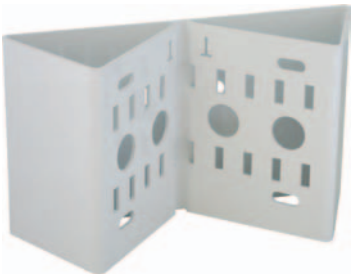
Outdoor Wall Mount (MX-WH-Dome)

When mounted to the **Outdoor Wall Mount**, the D12 can be used outside for enhanced outdoor surveillance. When mounted to the outdoor wall mount, the MOBOTIX D12 reaches protection class **IP65** (absolutely dustproof, resistant against water jets). Operating temperatures may vary between -30°C and +60°C (-22°F to 140°F), making it the ideal camera for the most demanding weather situations.

Outdoor Wall Mount from sturdy PBT 30GF

Corner and Pole Mount (MX-MH-Dome-ESWS)

If you are intending to mount the camera to the corner of a building or a pole, you should consider using the Corner and Pole Mount together with the Outdoor Wall Mount. This Corner and Pole Mount is made of **3 mm powder-coated stainless steel (white)** and has been designed specifically for outdoor use. The supplied stainless steel straps allow attaching the mount to poles with diameters between **60 and 180 mm (2.4 to 7.1 in)**; see section 2.11, *Mounting the Corner and Pole Mount*.



Corner and Pole Mount: Outdoor quality made of 3 mm stainless steel

MOBOTIX Cam-IO (MX-CAM-IO)

This installation module for MOBOTIX cameras features numerous connectors for external devices. It thus expands the scope of camera applications when adding external sensors using its two signal inputs. On the other hand, it also allows controlling other devices (two signal outputs, Line In/Out for audio signals) and serves as power supply of the camera.

For additional information on the MOBOTIX Cam-IO, see section 3.7.2, *MOBOTIX Cam-IO: Expansion Module for Easy Installation*.

Expansion box with various possibilities for attaching external devices and sensors

Split cable for ISDN-only power supply

If only ISDN is available for the camera and only one cable should be used for connecting the camera, you will need to inject power into the 8-wire cable using either a **power supply** and the **Network Power Adapter** or an **MX-NPR-4/8/20**.

Power injection into **one** cable when using only ISDN

3 OPERATING THE CAMERA

3.1 General Procedure

The MOBOTIX camera **does not require any software installation**; all you need is your preferred browser with JavaScript support to operate the camera. Thus, the MOBOTIX camera is supported by all common operating systems (such as **Windows**, **Macintosh** and **Linux, ...**).

3.1.1 Establishing the Power Supply of the Camera

MOBOTIX PoE products do not require any fans and are robust and reliable!

PoE components (IEEE 802.af) should not have fans as this would decrease the overall reliability of the entire system

You can choose between the following options:

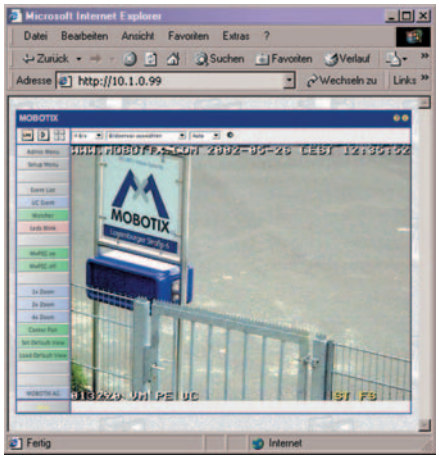
- **External power supply and Network Power Adapter (MX-NPA-3-RJ)**: Power supply of one camera injected into the network cabling (max. length 100 m/110 yd), from the NPA to the **10BaseT/NET** connector of the camera (see section 2.17, *Optional Accessories*).
- **Network Power Box/Rack (MX-NPR-4, or 8/20)**: Power supply of 4/8/20 cameras injected into the network cabling (max. length 100 m/110 yd), from the NPR to the **10BaseT/NET** connector of the camera (see section 3.3).
- **Power over Ethernet**: Power supply using network components that are conforming to the PoE standard **IEEE 802.3af**.

3.1.2 Connecting the Camera

The camera has been set at the factory to support the following connection methods:

Computer settings:
- IP address: 10.1.0.11
- Netmask: 255.0.0.0
- Gateway: none
- DNS: none

- **Ethernet interface of the camera** (10/100 Mbps Ethernet): Connect directly from a computer (using a crossover cable) or by using a Network Power Adapter or a switch and a regular patch cable. Launch a browser and enter the IP address printed on the camera label (e.g. **`10.1.0.99`**).
  If your network does not support a Class A network (i.e. **`10.x.x.x`**), your PC or laptop will have to be set temporarily to such a network address. For operating systems that allow multi-homing (Windows 2000, Windows XP, Linux, Mac OS X), you can set a second IP address in the **`10.x.x.x`** network.



In the RAS box (computer):
- camera phone number
- User: linux
- Password: tux

- **ISDN interface of the camera:** From a computer with ISDN card using a RAS connection (**`linux`**/**`tux`**). Launch a browser and enter the IP address printed on the camera label (e.g. **`10.1.0.99`**).

Once a connection has been established, click on the **Admin Menu** button to start configuring the camera. The **Admin Menu** controls all network settings (IP address, netmask, DHCP, etc.), ISDN behavior and other options.

Note

After first booting a new MOBOTIX camera or after resetting to factory defaults, accessing the Administration menu (**Admin Menu** button) will automatically start the **Quick Installation** wizard. This is where you configure the most important camera parameters in a step-by-step manner. If you have completed the Quick Installation wizard at least once, the standard Administration menu will open when you click on the **Admin Menu** button.

Always use Quick Installation for initial configuration

The configuration follows these steps:

1) Establish the first connection (Ethernet or ISDN).
2) Set the parameters for the desired connection type (Ethernet/ISDN) using the **Quick Installation** wizard.
3) Set the event control (events, actions and messages); see chapter 7, *Events, Actions and Messages*, in the *Software Manual*.
4) Set the storage parameters (FTP, internal and external ring buffer storage).
5) Store the configuration in the camera's permanent storage (flash).

Live image: http://preparkcam.mobotixserver.de

3.2 Overview of the Configuration Settings

- **Using the Quick Installation wizard**

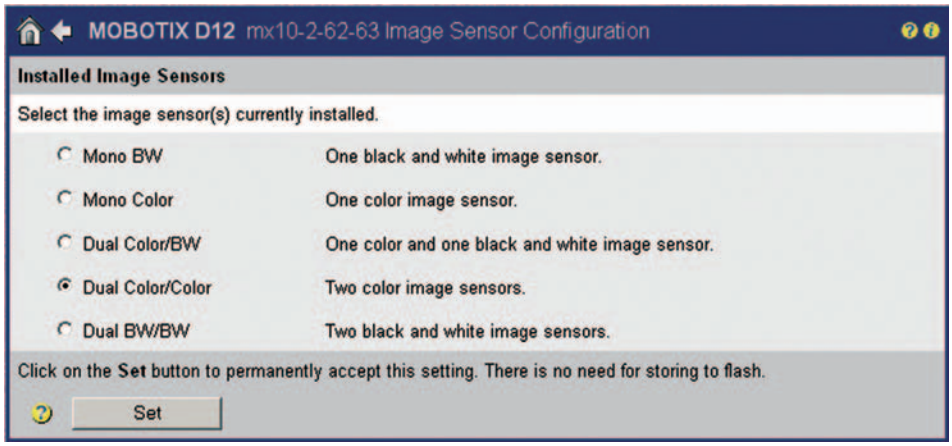
  Always use Quick Installation for initial configuration!

  After first booting the camera or after resetting it to factory defaults, any access to the administration menu (**Admin Menu** button) will start the **Quick Installation**.

  This wizard will guide you through the most important settings of the camera (configuration of the network interface, image control, etc.) and can also be used to reset the camera to its factory settings.

  Configuring the image sensors:
  Admin Menu > Quick Installation or
  Admin Menu > Image Sensor Configuration

  Configuring the installed image sensors is an important step when configuring the camera for the first time (**color or black & white; D12D only, not required for D12D-180° or D12M-CS**), which is either accomplished in the Quick Installation wizard or manually by opening **Admin Menu > Image Sensor Configuration** (see section 2.5, *Installing the Lens Units (D12D Standard)*).


MOBOTIX D12 mx10-2-62-63 Image Sensor Configuration
Installed Image Sensors
Select the image sensor(s) currently installed.
Mono BW
One black and white image sensor.
Mono Color
One color image sensor.
Dual Color/BW
One color and one black and white image sensor.
Dual Color/Color
Two color image sensors.
Dual BW/BW
Two black and white image sensors.
Click on the Set button to permanently accept this setting. There is no need for storing to flash.
Set

  It is also recommended to use **Admin Menu > Quick Installation** later on as well, e.g. if you would like to change connection parameters or add a new connection type.

- **Administration and setup of the camera**

  Admin Menu:

  User: admin
  Password: meinsm

  Basic configuration tasks of the camera (e.g. passwords, interfaces, software updates) are carried out from the administration menu (**Admin Menu** button) which requires the corresponding access rights (*admins* group).

  Setup Menu

  Open the **Setup Menu** (button) and find the dialogs for changing the image, event and recording settings in the **Image Control** and **Event Control** sections. These options are also available for users belonging to the *users* group.

  Some of these settings can be changed using the corresponding pull-down menus above the image on the Live screen.

- **The image settings are already optimized**

  The factory image settings of MOBOTIX cameras deliver excellent images for most application scenarios and should not be changed. If you do wish to make changes, your changes should be minor and gradual. If you would like to reset changes without resetting the complete configuration to factory defaults, you can use the **Factory** button at the bottom of the dialog to reset only this dialog's settings. If you would like to reset all image settings, you may do so using the **Manage Settings > Restore Image Settings** pull-down menu above the image on the Live screen.

Recommendation:
Always use factory image settings!

- **All changes are temporary**

  All changes to the configuration are only temporary and can thus be tested easily. Restoring the old configuration settings can be achieved using the **Restore** button in most dialogs or by running **Admin Menu > Restore last stored configuration from flash** (see also section 5.9, *Managing Settings*, in the *Software Manual*).

  Once you have finished configuring the camera, you should always **store the settings in the camera's permanent memory**. You can do so in the **Configuration** section of the administration menu (**Admin Menu > Store current configuration into flash memory**) or in each dialog (clicking on **Set** at the bottom of each dialog will temporarily set the changes; clicking on **Close** will ask you to store the complete configuration in the camera's permanent memory).

Make sure to permanently store changed parameters!

  The **Configuration** section of the administration menu provides more functions for storing, copying and managing camera settings. For additional information on this topic, see chapter 5, *Basic Camera Configuration*, in the *Software Manual*.

- **A camera that keeps time**

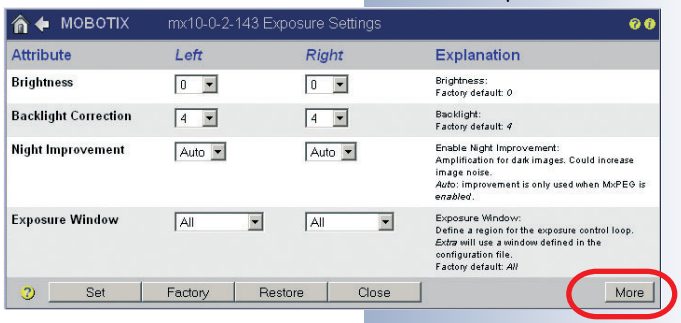
  Apart from a multitude of possibilities for controlling the camera using time (time tables, holiday and vacation, scheduled tasks, etc.), the camera can also **synchronize its internal clock**. This allows you to keep the camera in synch manually with a computer or fully automatic using a time server. The camera can use NTP time servers or time servers providing Time Protocol (RFC 868). For additional information on this topic, see section 5.4.2, *Date and Time / Time Zones and Time Servers*, in the *Software Manual*.

Automatic time synchronization using a time server

Click on the More/Less buttons to show/hide the advanced options

- **MOBOTIX cameras can do "More"**

  In order to provide a better overview, some of the camera dialogs hide less-often used options when showing the dialog. These dialogs have a **More** button in the bottom right corner; click on it to display the advanced options. If all options are displayed, the **Less** button appears. Clicking this button will hide the advanced options.



3.3 Connecting the Camera

Use the MOBOTIX MX-NPR-4 Network Power Box for smaller installations

Use the 19" MOBOTIX Netpower rack-mount units to supply power to 8 or 20 cameras (MX-NPR-8 or 20)

Uninterruptible power supply (UPS) should be installed

Notes

The MOBOTIX D12 **can only be powered using the 10BaseT/NET connector of the camera**. In order to inject the power supply into the network cabling, **MOBOTIX PoE products** have proven reliable and easy to install for one camera (**MX-NPA-3-RJ**), for up to four cameras (**MX-NPR-4**) and for 8 or 20 cameras (**MX-NPR-8/20**; see section 2.10, *Optional Accessories*).

It is highly recommended to use uninterruptible power supplies (UPS), which also protect the cameras and the network components against electrical surges. For more information on this topic, read section 2.3.5, *Using Uninterruptible Power Supplies (UPS)*.

Maximum Cable Lengths (Ethernet)

Data/power connection: max. **100 m (110 yards)**

3.3.1 Ethernet: Power Supply Using a Network Power Adapter (MX PoE)

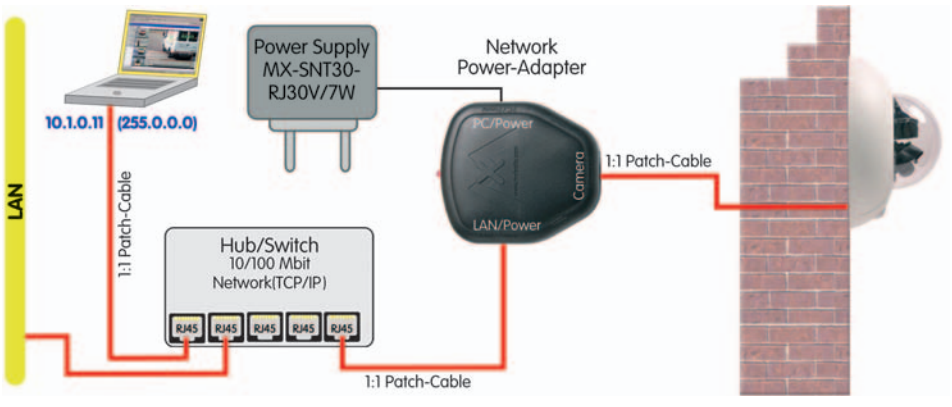
Make sure that you only use switches or routers that support the **10/100 Mbps Ethernet interface** of the camera and check the LED activity of the corresponding port of the switch or router. For additional information on this topic, see section 4.11, *Operating Many Cameras*, in the *Software Manual*.

(1) Connect the **Camera** connector of the Network Power Adapter to the **10BaseT/NET** connector of the camera.

2a) **Connecting to an Ethernet switch or router:**

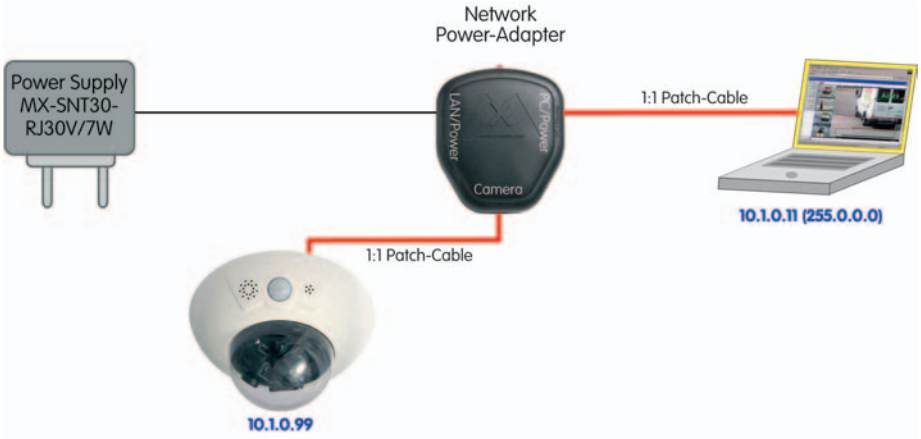
- Connect the **LAN/Power** connector of the NPA to an Ethernet connector of the switch/router or the Ethernet wall outlet.
- Plug the RJ45 connector of the external power unit into the **PC/Power** connector of the Network Power Adapter.

The Network Power Adapter replaces the crossover cable when directly connecting to a computer



2b) **Connecting directly to a computer:**

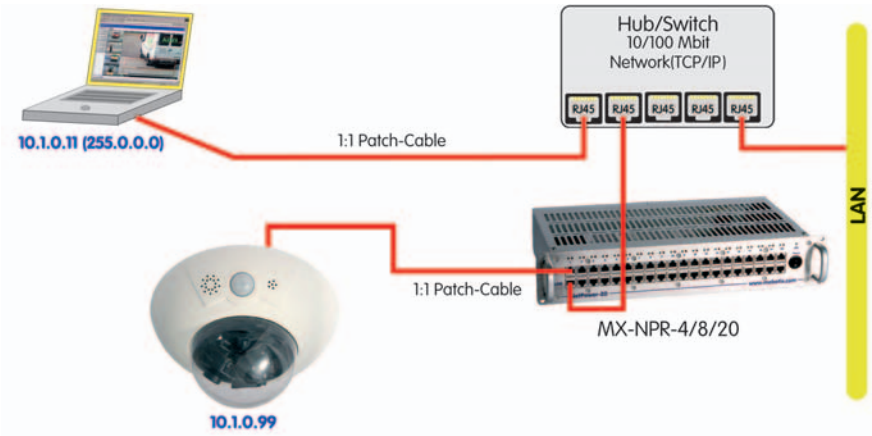
- Connect the **PC/Power** connector of the Network Power Adapter to the Ethernet port of the computer.
- Plug the RJ45 connector of the external power unit into the **LAN/Power** connector of the NPA.



The Network Power Adapter replaces the crossover cable when directly connecting to a computer

3.3.2 Ethernet: Power Supply Using a Network Power Rack (MX PoE)

- Connect the **CAM** connector of the **Network Power Rack (MX-NPR-8/20)** to the **10BaseT/NET** connector of the camera.
- Connect the **LAN** connector of the Network Power Rack to an Ethernet connector of the switch/router.



MOBOTIX PoE products have zero maintenance and are reliable as the systems do not require fans

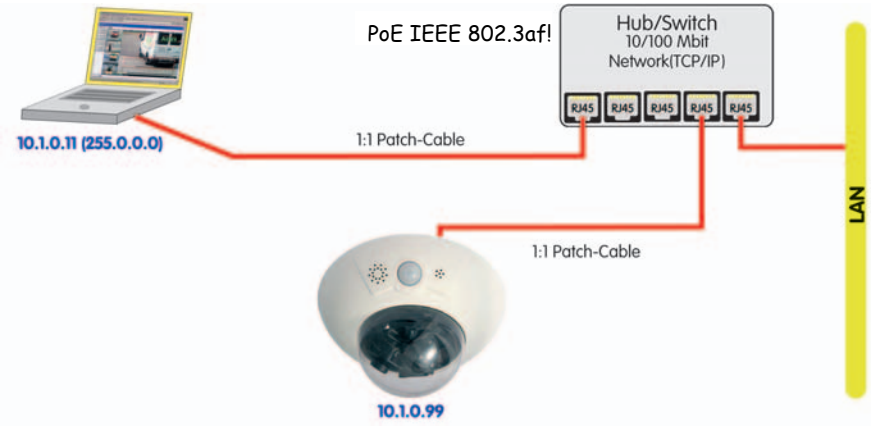
A **Network Power Box (MX-NPR-4)** is connected in the same way.

Advantages of MOBOTIX PoE Products

- Zero maintenance and reliable without fans.
- Higher reliability of the system as a whole, since standard switches without PoE can be used (lower risk of failure).
- Easy installation on DIN rails (*MX-NPR-4*) or in 19" racks (*MX-NPR-8/20*).

3.3.3 Ethernet: Power Supply Using PoE Products (Power over Ethernet)

- Connect the **10BaseT/NET** connector of the camera to the Ethernet connector of the switch/router. The network components need to support the **PoE standard IEEE 802.3af**.



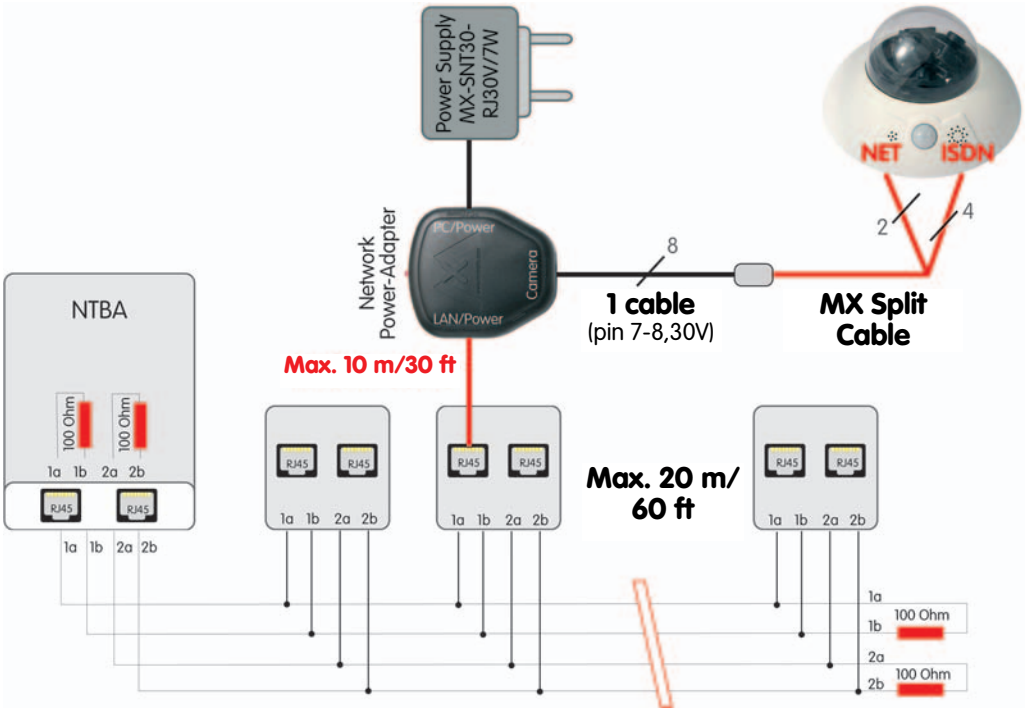
PoE components without fans increase overall reliability of the entire system

Note

If you are using **IEEE 802.3af Power over Ethernet network components** for supplying power to MOBOTIX cameras, make sure that these components do not have a fan. Since the power consumption of MOBOTIX cameras is very low compared to other products, this increases the reliability of the entire system and expands the life cycle of these components.

3.3.4 ISDN: Power Supply Using a Network Power Adapter

(1) Push the designated connector of the ISDN split cable (*MX-OPT-ISDN-SPLIT;* optional accessory) into the **10BaseT/NET** connector and the remaining cable into the **ISDN** connector of the camera.
(2) Use an 8-wire (patch) cable to connect the **Camera** connector of the Network Power Adapter to the socket of the **ISDN** split cable.
(3) Connect the **LAN/Power** connector of the Network Power Adapter to the ISDN S0 bus/NT.
(4) Plug the RJ45 connector of the external power unit into the **PC/Power** connector of the Network Power Adapter.



Maximum Cable Lengths (ISDN)

Connection to **ISDN outlet**: max. **5-10 m (16 to 33 ft)**
Connection to **NT (without term. resistors)**: max. **5-10 m (16 to 33 ft)**
Connection to **NT (with termination resistors)**: **120 m (130 yd)**

Make sure not to exceed the maximum cable lengths

Caution

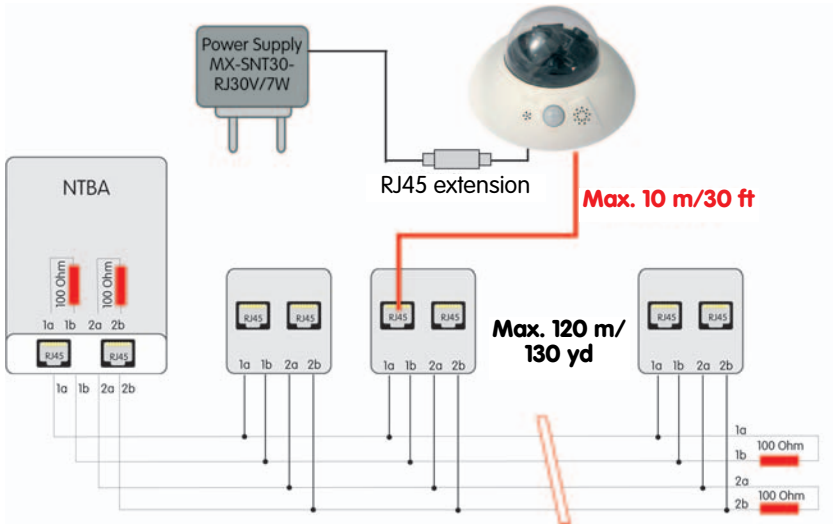
Missing termination resistors and wrong cable lengths are the most common installation errors!
Always observe the instructions regarding maximum cable lengths and proper ISDN termination!

3.3.5 ISDN: Directly Supplying Power Using the External Power Supply

1) Connect the **ISDN** connector of the camera to the S0 bus/NT.

Maximum of 12 wall outlets, with up to 8 devices attached

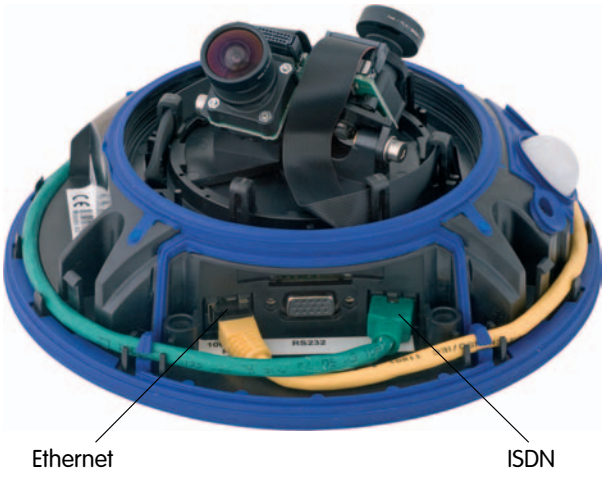
ISDN is a bus system, which requires termination (100 Ohms) at both ends



2) Plug the RJ45 connector of the external power supply into an RJ45 extension cable and plug the extension into the **10BaseT/NET** connector of the camera.

3.3.6 Ethernet and ISDN

In order to use Ethernet and ISDN **simultaneously**, plug the Ethernet and ISDN cables into the corresponding connectors of the camera. **Power is supplied only via the Ethernet cable and the 10BaseT/NET connector of the camera** (using **MOBOTIX PoE products** or Power over Ethernet according to IEEE 802.af).



3.3.7 Camera Startup Sequence

As soon as the camera's power supply has been established, the 4 LEDs (behind the PIR cover of the camera) will show the progress of the starting sequence:

- **Hardware test**: After the power has been connected, the **LEDs 1 and 5** will light up for about two seconds. The camera's computer (boot loader) checks the camera hardware.
- **Backup system test**: The camera checks the operating system. **In case of an error**, the camera will start using the backup operating system, allowing you to re-install the system software.
- **Unpacking the OS**: The boot loader unpacks the operating system from the Flash EPROM and copies it to the camera's memory (the **LEDs 1 and 5** light up for about 15 seconds).
- **Starting the OS**: The LINUX operating system unpacks its data to the ram-disk and initializes the system. All operating system components are verified against their checksums in order to detect changes. **In case of an error**, the camera will start using the backup operating system instead.
- **Boot mode (factory IP address/DHCP)**: If the magnetic side of the supplied custom tool is pressed to the spot marked **L**, the camera starts either using its factory default IP address (**all LEDs light up**, see section 3.6, *Starting the Camera Using the Factory IP Address*) or with DHCP support (**LEDs 0 and 5 light up**, see section 3.5, *Starting the Camera With an Automatic IP Address (DHCP)*).
- **Starting the applications**: Once the application software is running, the **LEDs 1 and 5** start blinking and **LED 0** burns continuously (provided the LEDs have not been switched off for this configuration). You can now access the camera using a web browser.

Hardware Test

Backup System Test

Unpacking/ Starting OS

Factory IP Address

DHCP

Ready

Note

During the startup sequence, the LEDs will always light up, even if they have been deactivated in **Admin Menu > LED Setup**.

Signals of the camera LEDs:

0	On
1	Camera
2	Network
5	Camera

3.4 The First Image from the Camera

As soon as the Ethernet connection (see section 3.4.1, *Preparing the Ethernet Connection*) or the ISDN connection (see section 3.4.2, *Preparing the ISDN Connection*) has been established, you have the following possibilities to get the first image from the camera:

Working with the web-based user interface only requires a web browser with activated JavaScript!

- **Direct access using a browser** (section 3.4.4, *The First Image in the Browser*).
- **Display the camera using MxControlCenter** (free Windows client for MOBOTIX cameras; section 3.4.7, *The First Image in MxControlCenter*)
  Open the browser-based user interface of the camera to complete the remaining configuration tasks (see section 4.3, *The Live Screen in the Browser*, in the *Software Manual*).

3.4.1 Preparing the Ethernet Connection

Caution:
Netmask 255.0.0.0

For this example, we will use a camera with the factory IP address **10.1.0.99**. **Replace this IP address with the IP address of your camera**. You will find this address on a **small sticker on the camera**. Accessing the camera is always the same and is independent of the connection type: simply enter the camera's IP address in the address field of the browser (see section 3.4.4, *The First Image in the Browser*).

Note

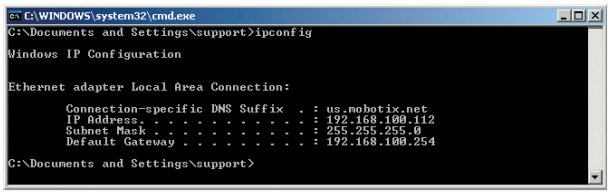
If you would like to have a running camera **repeat its IP address**, simply activate the **L button** once using the magnetic side of the custom tool.

Open a Command Prompt (Windows):
Start > **Run**, enter "**cmd**", then press [Return]

Your computer has to have a network or a wireless interface, and it should be in the same subnet as the camera. If your network also uses IP addresses of a class A network (e.g. **10.x.x.x**, network mask **255.0.0.0**), you should be able to access the camera directly (provided no other network device uses the same IP address).

Determine the IP address of your computer:

- Open a command shell (Windows) or a terminal (Linux/UNIX/OS X) and enter the following command:
  Windows 2000/XP: **ipconfig**
  Linux/UNIX/OS X: **ifconfig**


C:\WINDOWS\system32\cmd.exe
C:\Documents and Settings\support>ipconfig
Windows IP Configuration
Ethernet adapter Local Area Connection:
Connection-specific DNS Suffix . : us.mobotix.net
IP Address. . . . . : 192.168.100.112
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.100.254
C:\Documents and Settings\support>

You will find the IP address of your Windows computer under **IP address**; for Linux/UNIX/OS X computers, search for the **inet address** parameter of the **eth0** device (the first network interface). If your computer does not use an IP address in the **10.x.x.x** range, you should change the network configuration of your computer or add a new IP address (see below).

Make sure that no other network device uses the camera's IP address:

- Open a command shell (Windows) or a terminal (Linux/UNIX/OS X) and enter the following command:
  `ping <factory IP address>`

The factory IP address is printed on the sticker on the camera housing

Example: 10.1.0.99

Make sure that you use the IP address of your camera instead of 10.1.0.99!

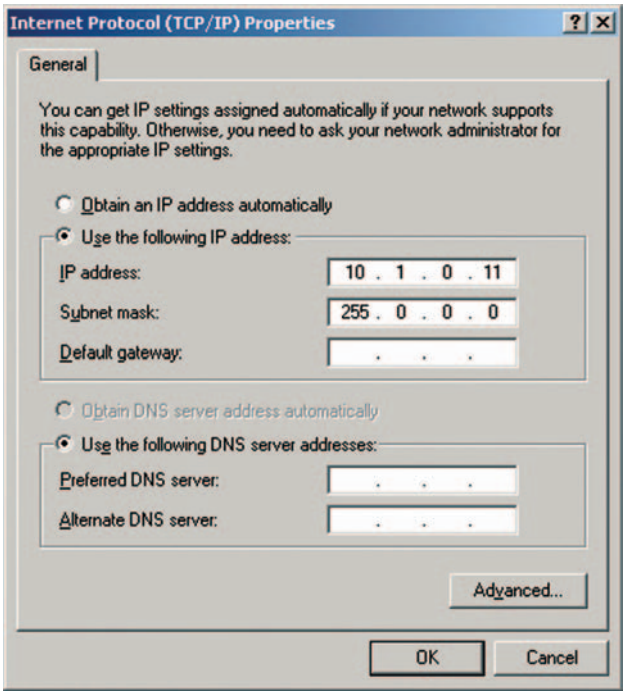
If you receive an answer from another network device although the camera is not connected, you will have to remove that device until you have reset the MOBOTIX camera to a free IP address. We recommend using the Quick Installation wizard for assigning a new IP address to the camera.

If your computer does not use an IP address in the `10.0.0.0` network (e.g. a `192.168.x.x` or `172.x.x.x` network), you should temporarily set a new IP address in the `10.x.x.x` range:

Windows 2000/XP

Setting up an IP address on Windows computers

(1) Open the **Network Connections** and open the **Properties of LAN Connection**.
(2) Double-click **Internet Protocol (TCP/IP)**.
(3) On the **General** tab, activate the **Use the following address** option.
(4) Enter an IP address (e.g. **`10.1.0.11`**) in the class A network (`10.x.x.x`) that is unique in your network and that is not the same as the camera's IP address.
(5) Close all dialogs by clicking on **OK**.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
10 . 1 . 0 . 11
Subnet mask:
255 . 0 . 0 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

Linux/UNIX/OS X

(1) Open a terminal as **`root`** user and enter the following command (**`eth0`** usually is the first network interface):
`ifconfig eth0:1 10.1.0.11`

Setting up a second IP address on Linux/UNIX computers

The computer now has the additional IP address **`10.1.0.11`**, allowing it to access the camera with its factory IP address in the `10.x.x.x` network (**`10.1.0.99`** in this example).

3.4.2 Preparing the ISDN Connection

Requires an ISDN interface card in the PC

Your computer must have a properly configured ISDN card to establish a connection. If your network has an ISDN router, contact your network administrator for more information.

(1) Create a new Point-to-Point connection (PPP) on your computer.
(2) Enter **linux** as user name and **tux** as password.
(3) Enter the phone number (a free MSN) of the ISDN port to which you connected the camera. If your computer is connected to an internal telephone system, make sure that you enter the prefix that is required to obtain an outside line.
The MOBOTIX camera can **automatically determine the MSN** (see section 5.2.2, *Quick Installation Pages in Detail*, in the *Software Manual*).
(4) Establish the connection.

Assign different MSNs (phone numbers) to the cameras if they are on the same S0 bus

By factory default, the camera will react to every MSN of an ISDN port (you may change this in **Admin Menu > ISDN Connections**).

Note

Default ISDN access credentials for RAS connections
User Name: **linux**
Password: **tux**

3.4.3 Simultaneously Using ISDN and Ethernet Connections (Gateway)

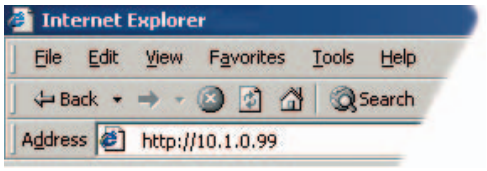
In most cases, MOBOTIX cameras will be used either on an Ethernet LAN **or** on ISDN, not both. The gateway (for accessing computers outside of the local network) needs to be set manually for Ethernet; it is usually obtained automatically for ISDN.

In order for the camera to open an ISDN dial-out connection while both Ethernet and ISDN are used, the **default route** has to be set to the preferred ISDN dial-out connection (**Admin Menu > ISDN Data Connections > Dial-Out Connections**). Section 5.2, *Quick Installation* in the *Software Manual*, contains more information on this topic.

Routing allows reaching different network addresses using different connection types/routes

If you would like to use connections to different networks for other tasks (e.g. backup to an FTP server), you can set more network routes in **Admin Menu > Routing**. See the **Routing** topic in the camera help for more information.

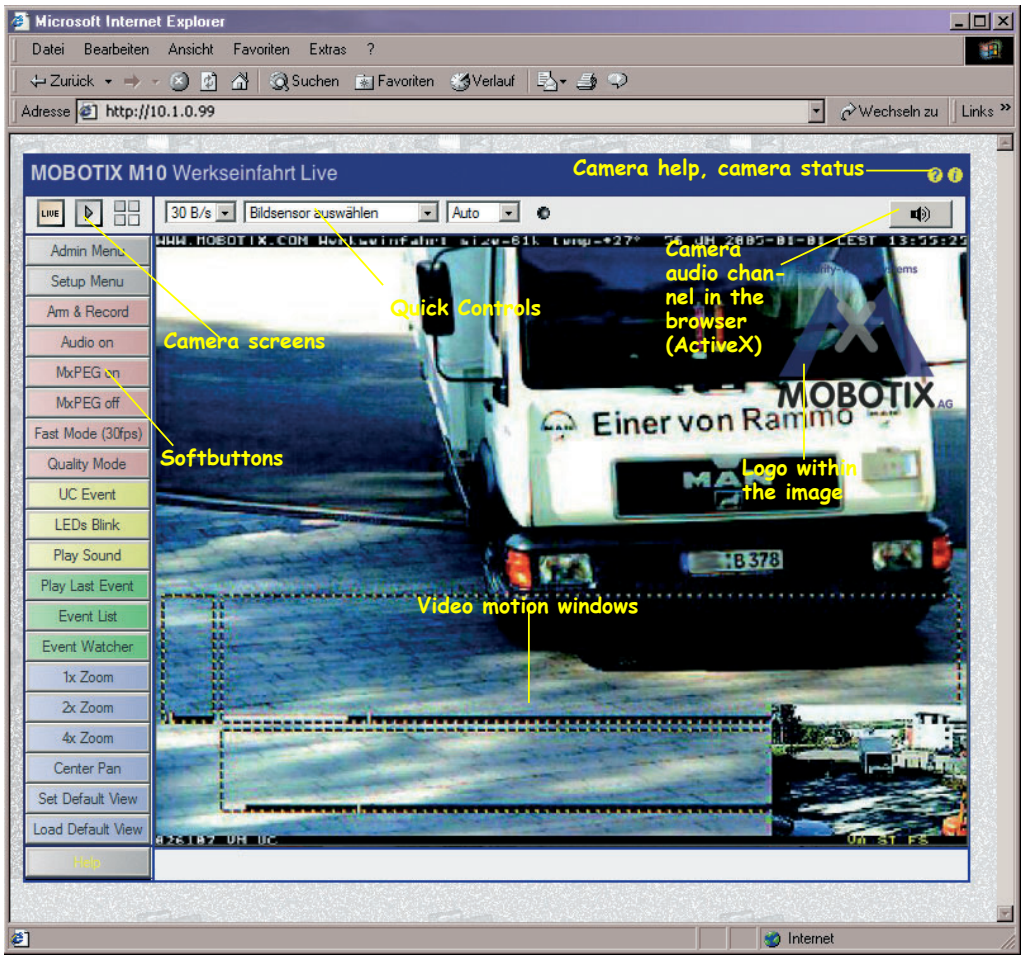
3.4.4 The First Image in the Browser



Camera access: http://10.1.0.99 (example IP)

The factory IP address is printed on the sticker on the camera

Now that you have successfully started the camera for the first time, you can access the camera using your preferred browser to see the live video stream and the user interface. Internet Explorer, Mozilla, Firefox, Safari or any other graphical browser with activated JavaScript is suitable. The operating system is of no importance, even PDAs can be used without any problems.



Administration menu:
User Name: admin
Password: meinsm

Softbuttons are freely configurable

After entering the camera's IP address in the browser address bar (e.g. `http://10.1.0.99`), you will see the **Live** screen of the MOBOTIX camera with its user interface controls, such as softbuttons, buttons for the different camera screens, **pull-down menus** (*Quick Controls*), icons for accessing the **online help** and the **camera status**, and status information elements above and below the live image.

Make sure that you use the IP address of your camera instead of 10.1.0.99!

Note

Credentials for accessing the Administration Menu

User Name: `admin`

Password: `meinsm`

Changing the factory IP address: Always use Admin Menu > Quick Installation

Audio announcement of the IP address works on **all cameras**

Note

Factory Defaults: Every MOBOTIX camera has its individual factory IP address (e.g. **10.1.0.99**). You will find this address on a small sticker on the camera housing. If you have started the camera using DHCP or you have set the IP address manually, use the new IP address (e.g. **192.168.0.99**) instead of the factory IP address. Pressing the **"L" button** of the camera will prompt the camera to announce its current IP address over the speaker. For additional information on this topic, see section 3.5, *Starting the Camera With an Automatic IP Address (DHCP)*.

Troubleshooting: If your web browser does not show the camera's **Live** screen after you have entered the IP address, you should try to locate and resolve the error as described in chapter 12, *Troubleshooting*, in the *Software Manual*.

MxControlCenter: In order to see the live image of the camera, you can also use other applications or the integrated programming interface of the MOBOTIX camera. **MxControlCenter** for Windows is such an application and is provided **free of charge** by MOBOTIX. Besides its ability to display fast live video of up to **30 cameras simultaneously at 30 fps each** on one PC, MxControlCenter also allows recording and playing back video clips with realtime audio via the network and can control pan/tilt heads using a joystick or the mouse. Download the newest version of MxControlCenter from the MOBOTIX website. The website contains more information on MOBOTIX systems as well as the MxControlCenter help.

3.4.5 Additional Information

Camera Help

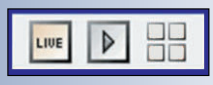
For more information on this topic, see the **News** and **Functional Overview** pages in the online help of the camera's browser interface. Click on the yellow icon in the top right corner to open the camera's online help.

Camera status

In order to obtain more information on the camera and its current configuration, open the **Camera Status** dialog by clicking on the yellow icon in the top right corner of the camera's browser interface.

Another source of information on all dialogs and parameters of the MOBOTIX camera is the **Reference Manual** that you can download from **www.mobotix.com**. The Reference Manual consists of the MOBOTIX camera's online help in one PDF file.

3.4.6 Camera Screens in the Browser



Per factory default, the MOBOTIX camera first shows the **Live** screen. You can set a different start page in order to prevent others from changing the settings. In addition to this, you can assign user names and passwords to prevent unauthorized access or you can restrict access to the current live image only by setting the **Guest** screen as the start page.

Use the Administration menu to set the camera screen that should appear initially when accessing the camera IP address

The following screens are available:

- **Guest** screen: Only shows the current live image with reduced frame rate (see section 4.7, *Guest Screen*, in the *Software Manual*).
- **Live** screen: Shows the current live image and allows changing the image and event settings of the camera (see section 4.3, *The Live Screen in the Browser*, in the *Software Manual*).
- **Playback** screen: Shows all recorded images or video clips with extended functions for searching and downloading images, regardless of where the images are stored (in the internal or the external ring buffer on a file server or PC; see section 4.4, *The Playback Screen in the Browser*, in the *Software Manual*).
- **MultiView** screen: Shows multiple cameras or the last events in a freely definable layout (see section 4.5, *The MultiView Screen in the Browser*, in the *Software Manual*).
- **PDA** screen and **PDA Event List**: Both screens are optimized for PDAs with a focus on fast data transmission with low bandwidth requirements (GSM, GPRS) on devices with small displays (PDAs, mobile phones, sub notebooks). The **PDA Event List** in particular gives a quick overview over the last events since the live image is not transferred (see section 4.6, *The PDA Screen*, in the *Software Manual*).

http://10.1.0.99/pda opens the PDA screen

Note

Open **Admin Menu > Language and Entry Page** to set a different start page when accessing the camera.

Open **Admin Menu > Users and Passwords** and **Admin Menu > Group Access Control Lists** to set user rights and to prevent unauthorized access to certain screens (see section 5.4.1, *Passwords*, in the *Software Manual*).

For more information on camera screens, see the **online help** of the camera's browser interface. Click on the yellow icon in the top right corner of the **Live screen** to open the corresponding page of the online help.

Live/Playback/MultiView: Click on to open the online help pages for the camera screens

3.4.7 Access Using Zeroconf/Bonjour

Automatic network configuration for MOBOTIX cameras using Zeroconf/Bonjour

Zeroconf (short for *Zero Configuration Networking*) describes the networking method of automatically establishing an IP-based network without the help of servers and without changing any settings. Zeroconf-capable devices automatically announce their name and the service they are providing (printer, email server, etc.) in the network. As a basic technology, Zeroconf is part of the current Windows, Linux and Mac OS X operating systems.

Bonjour is the implementation of this service under Apple Mac OS X from version 10.4; in Mac OS X 10.2 and 10.3, this service is called **Rendezvous**.

Apple Bonjour

Bonjour is available free of charge for **Windows** computers from the Apple web site **www.apple.com/bonjour**.

For **Linux** and **Unix**, **Avahi** provides the corresponding functionality.

For further information on Bonjour and Zeroconf, please consult **www.apple.com/macosx/features/bonjour** and the Zeroconf web site **www.zeroconf.org**.

MOBOTIX cameras support Bonjour by default from software version 3.0.3.37!

From software version **3.0.3.37**, MOBOTIX cameras automatically offer their web service via Zeroconf/Bonjour. This means that the cameras will announce themselves automatically in a Bonjour list in the web browser and in MxControlCenter. Selecting a MOBOTIX camera in the browser will display the camera's user interface in the browser window; likewise, MxControlCenter will be able to find the camera.

Note

It is the huge **advantage of Zeroconf/Bonjour**, that **you do not need to know the IP address or the name of the MOBOTIX camera in order to access it**.

Another advantage of Bonjour is the fact that **cameras are found regardless if they are in the same subnet as the computer or in other subnets, as long as they are in the same physical network**. If the cameras are not in the same subnet, actually connecting to them is not as easy. The name of the camera is listed in the web browser, but connecting via HTTP will not work, however. Using **MxControlCenter allows reconfiguring the camera automatically for the subnet of the computer. You can now easily reach the camera in a web browser and MxControlCenter**.

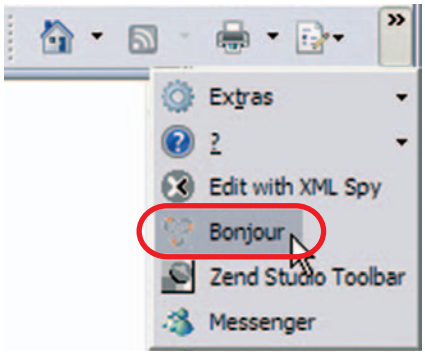
Prerequisites for using Zeroconf/Bonjour

MOBOTIX camera:

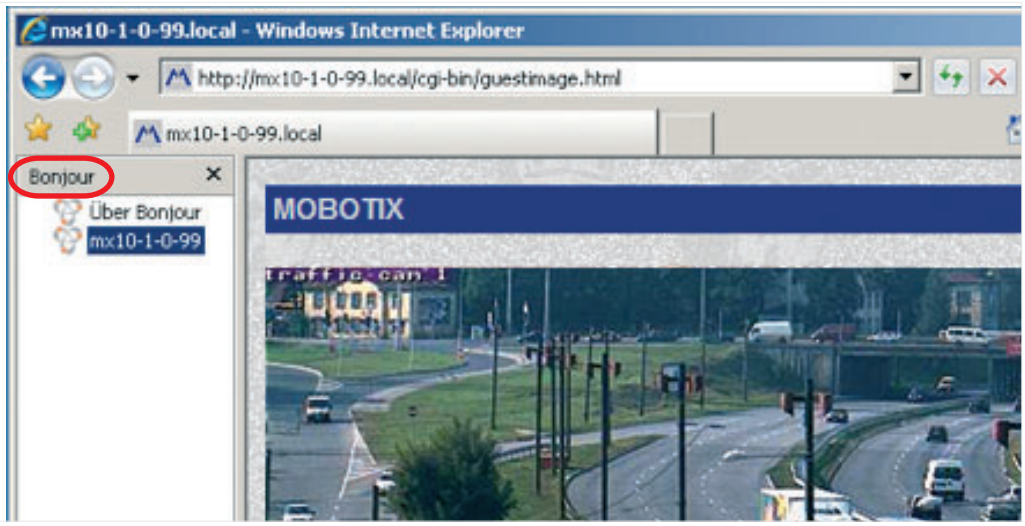
- Activated **Zeroconf** (**Admin Menu > Ethernet Interface**). This is the **factory default** for MOBOTIX cameras from software version 3.0.3.37.
- The camera needs to be in the same subnet as the computer (**Admin Menu > Ethernet Interface**).

Operating system:

- **Microsoft Windows (2000, XP, 2003, Vista)**: Bonjour for Windows has to be installed (**`www.apple.com/bonjour`**). The application also configures the Windows firewall, installs an add-on for Internet Explorer and the Java Bonjour libraries. The list of Bonjour-enabled network devices is shown in Internet Explorer once the **Bonjour** add-on has been activated in the main toolbar of Internet Explorer.

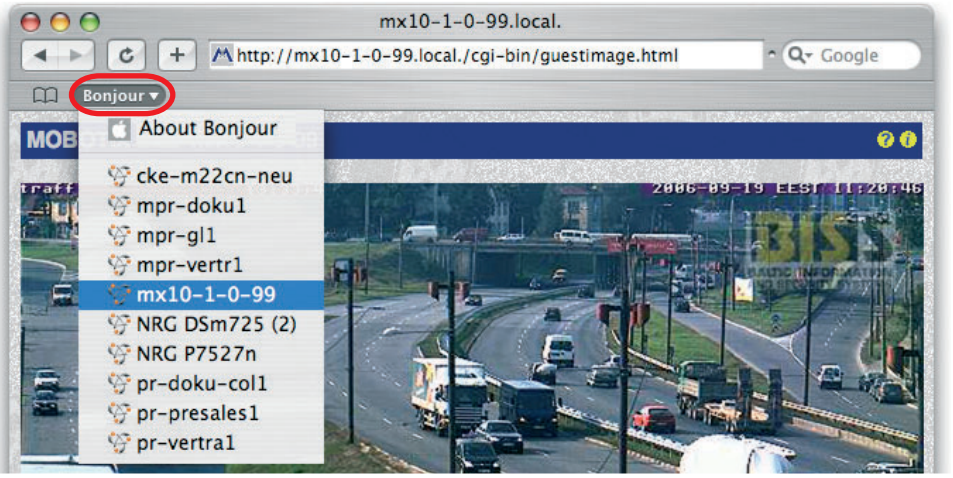


Internet Explorer (Windows): Activate Bonjour add-On



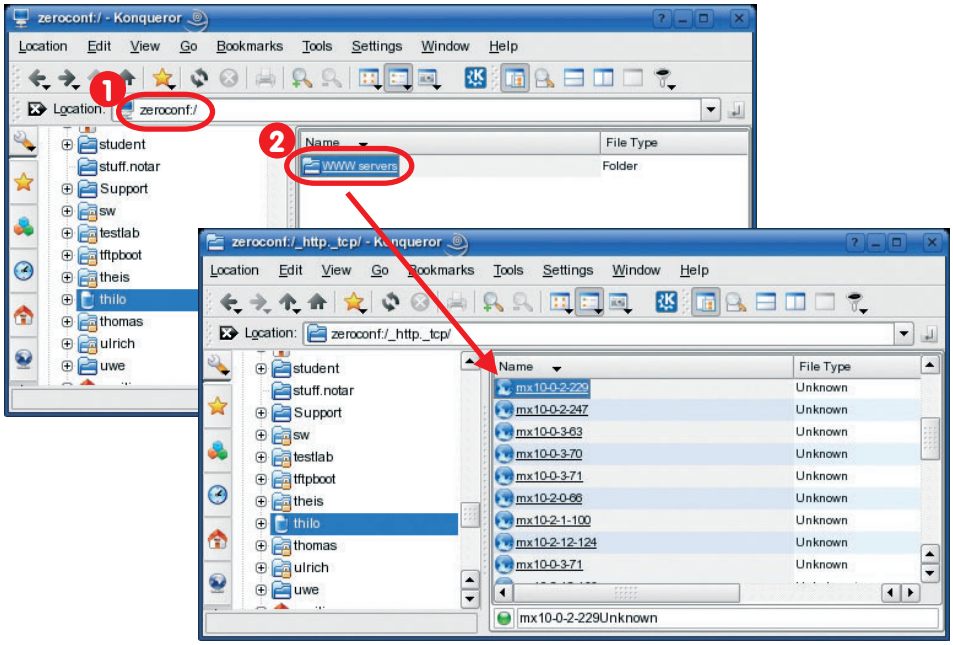
Internet Explorer with activated Bonjour sidebar

- **Macintosh OS X (10.2 or higher)**: Bonjour is included in the Apple operating system. There is no other configuration required. The list of Bonjour-enabled network devices is displayed in Safari after clicking on the **Bonjour** button.



Bonjour is enabled by default in Safari (Mac OS X)

- **Linux**: Zeroconf is included in KDE from version 3.4 and in Gnome from version 2.8. The list of Bonjour-enabled network devices is displayed after entering **`zeroconf:/`** in the Konqueror address bar. The displayed list contains all Zeroconf-enabled network services (see figure below). Clicking on **`/WWW servers`** displays the list of all available MOBOTIX cameras (and all other Bonjour-enabled devices). Linux users can also use the **`mdns-scan`** application in a terminal to search for Bonjour-enabled devices on the network.



Konqueror on SuSE

Note

If a **proxy server** is used in your network, you may get an error message when trying to access a MOBOTIX camera in the web browser. Make sure that the list of proxy exceptions in your browser contains the following entry:

`*.local` (Windows)
`*.local.` (Mac OS X)
`.local.` (Linux)

To find the **proxy exceptions** in **Internet Explorer** under **Windows**, open **Tools > Connections > LAN Settings > Settings > Proxy server > Advanced** and add the entry in the **Exceptions** text field.

To find the **proxy exceptions** in **Mac OS X**, open **System Prefencenes > Network > Proxies** and add the entry in the **Bypass proxy settings for these Hosts and Domains** text field.

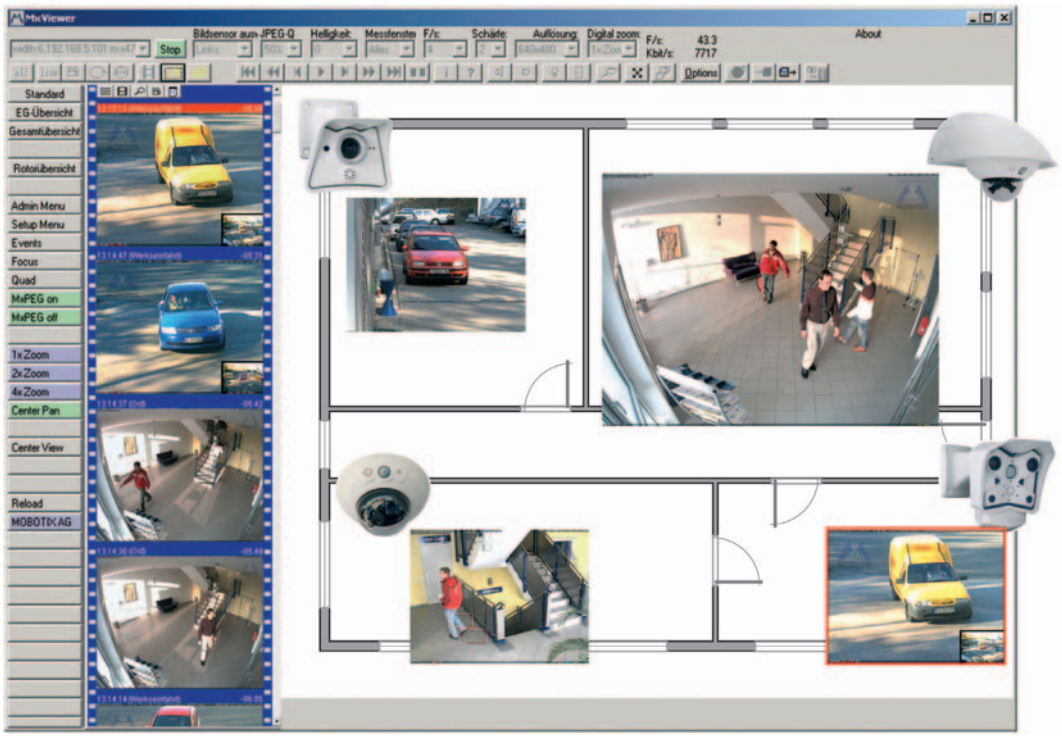
As an alternative, your network administrator can reconfigure the proxy server so that it does not block `.local` addresses.

Caution: **Proxy servers** may cause errors when trying to establish a connection

3.4.8 The First Image in MxControlCenter

Download MxControlCenter free of charge from www.mobotix.com

MOBOTIX MxControlCenter is a free Windows application that allows displaying **multiple MOBOTIX cameras** on one computer and provides alarm management functions. It can easily handle displaying **30 cameras with CIF resolution simultaneously** at **30 fps each** in **MxPEG** format on one standard PC with Intel Pentium 4 and 3 GHz.



MxControlCenter Windows client with alarm list, background image and freely positioned cameras

MxControlCenter can do quite a bit more than simply display the video and audio data from MOBOTIX cameras. The unique features of MxControlCenter in combination with the MOBOTIX cameras create a full-featured security system: intelligent alarm handling, various ways of arranging the camera views on different layouts (MultiView screens), ability to display cameras that are sending alarm notifications, the integrated camera management functions, and an array of other interesting features.

Further information on MxControlCenter

For further information on **MxControlCenter**, download the *MxControlCenter User Manual* from **www.mobotix.com**:

- Saving and loading MxPEG video clips
- Creating and editing layouts using the Layout Editor

Further information in the Software Manual

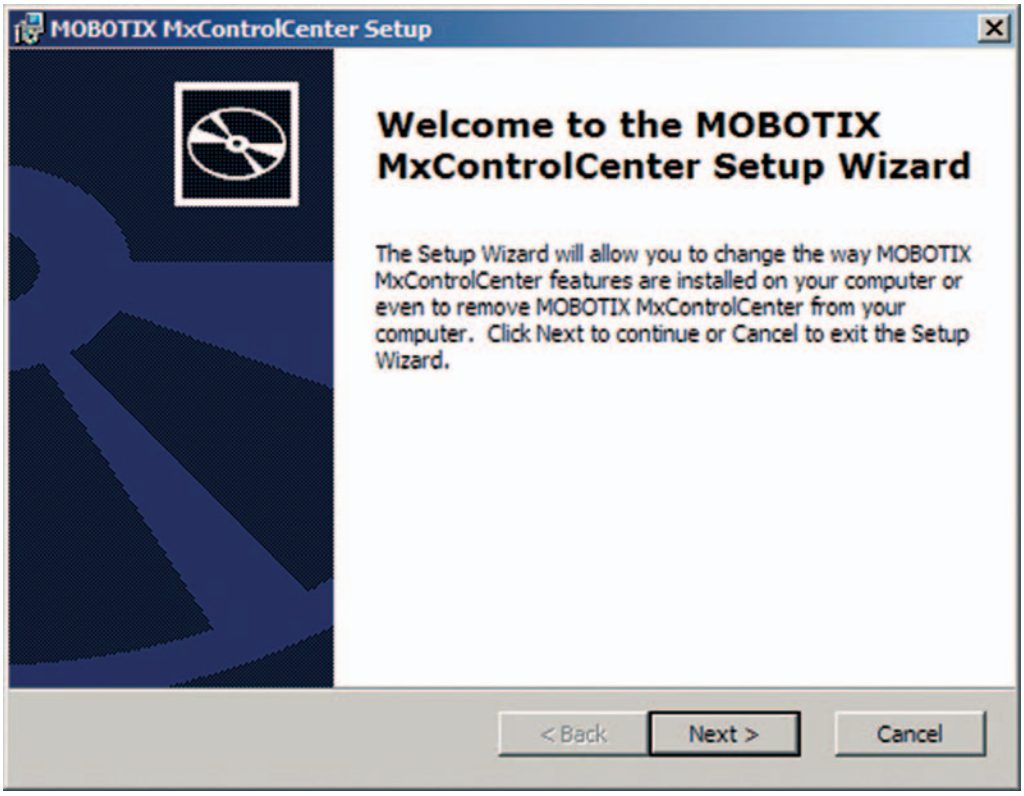
- Section 4.3.5: *JPEG, MxPEG and Audio*
- Section 4.3.6: *Background Information on JPEG, MxPEG and Audio*
- Section 4.10: *Fast Video Streaming*

Installing MxControlCenter

If you have an **MxControlCenter installation CD**, insert it into your computer drive.

If this is not the case or if you would like to update an older version, you can download the latest Windows installer (**MSI** file) from the MOBOTIX website and then manually install the current version. The latest version is available at **www.mobotix.com > Support > Software-Downloads** under **MxControlCenter**.

If you are using the installation CD, the installation process starts automatically and leads you through the necessary steps. If you have downloaded the Installer, simply double-click the **MSI** file to begin the process.


MOBOTIX MxControlCenter Setup
Welcome to the MOBOTIX MxControlCenter Setup Wizard
The Setup Wizard will allow you to change the way MOBOTIX MxControlCenter features are installed on your computer or even to remove MOBOTIX MxControlCenter from your computer. Click Next to continue or Cancel to exit the Setup Wizard.
< Back
Next >
Cancel

Automatic installation of MxControlCenter with Windows Installer (MSI)

The installer automatically creates the shortcuts selected in the installation process (desktop, start menu, etc.).

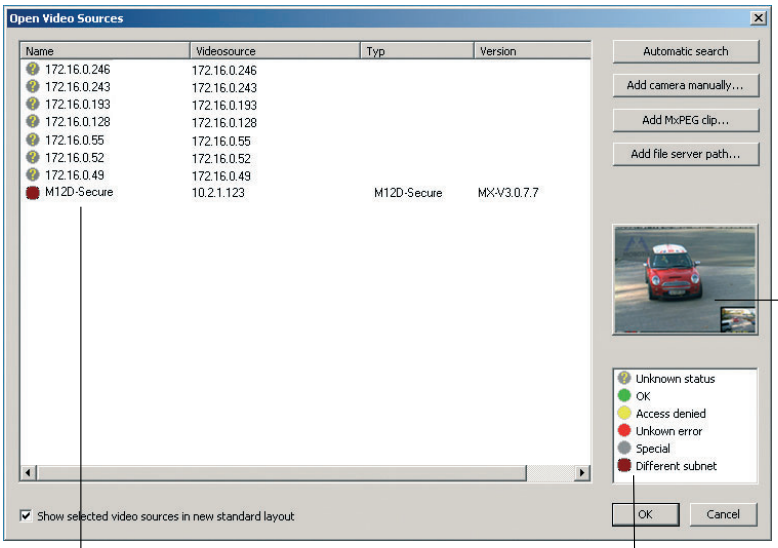
Using MxControlCenter for the First Time

Double-click on the shortcut created by the installer (see *Installing MxControlCenter*) or the program file itself to start MxControlCenter.

Automated Search for MOBOTIX Cameras

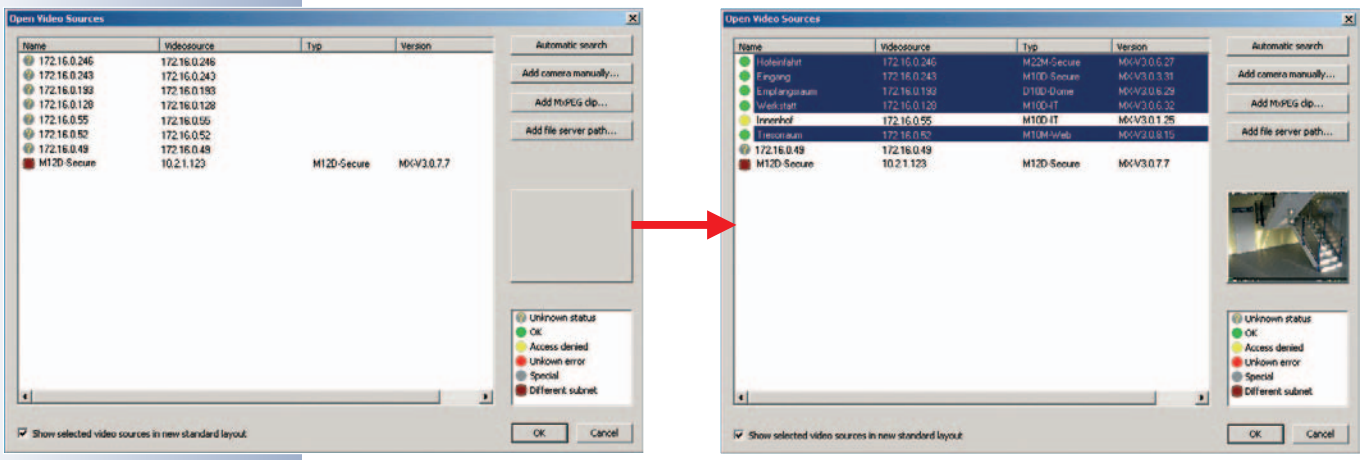
If you start MxControlCenter for the first time or if you have not yet stored a start layout with the desired video sources (i.e. MOBOTIX cameras), the **Open Video Sources** dialog will open and automatically starts scanning the network.

Automated search for MOBOTIX cameras!



After all MOBOTIX cameras have been identified, MxControlCenter performs an operational test on the cameras to determine their status and then lists them according to the legend.

Next, MxControlCenter **automatically selects all cameras**.



Click on **OK** to add the selected cameras to the **Open Video Sources** dialog.

Anytime you connect a new camera to the local network, you can initiate the search in the **Open Video Sources** dialog again by pushing the Automatic search button.

If the desired MOBOTIX cameras are highlighted in the video source list, proceed to *Selecting Video Sources*.

Configuring MOBOTIX Cameras for a Different Network

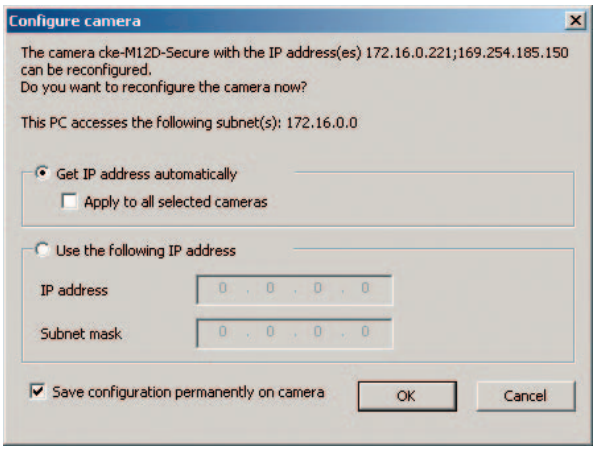
Automatic camera configuration by MxControlCenter

Using Bonjour, MxControlCenter finds not only cameras on the same subnet (network range) but also **MOBOTIX cameras located in other subnets** (status: *Different subnet*). You will not be able to establish any connection to cameras in a different network or subnet (without going into much further detail about the complicated details of TCP/IP network configurations). This can happen, for example, when a camera with a factory IP address is connected to a network in which a DHCP server automatically assigns the IP addresses.

Click on *Configure network* in the context menu and **MxControlCenter will automatically reconfigure this camera** so that it is "integrated" into your existing subnet. However, MxControlCenter first needs some information about the subnet into which the camera will be integrated. You can make these changes in the **Configure Cameras** dialog that is opening automatically.

If your computer gets its IP address automatically from a DHCP server, then this is certainly the best choice for the new camera and most likely for all other cameras which have been found in a different subnet (**Apply to all inaccessible cameras** checkbox).

If you have assigned a fixed IP address to your computer, you will certainly prefer to assign fixed IP addresses (issued by your system administrator) to every camera. In most cases, you should enter a similar configuration as the one found for your computer's **Network Connections** in the **Properties of Internet protocol (TCP/IP)** dialog.


Configure camera
The camera cke-M12D-Secure with the IP address(es) 172.16.0.221;169.254.185.150 can be reconfigured.
Do you want to reconfigure the camera now?
This PC accesses the following subnet(s): 172.16.0.0
Get IP address automatically
Apply to all selected cameras
Use the following IP address
IP address
Subnet mask
Save configuration permanently on camera
OK
Cancel

MxControlCenter changes the network configuration of the current camera and, after a short time, the camera also appears in the list with a new IP address and in the same subnet as your computer.

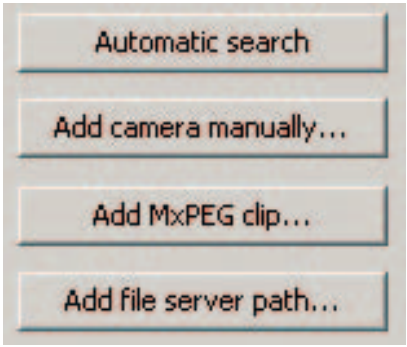
Make sure that the **Save camera configuration permanently** checkbox is activated so that the new network settings will be used from now on and not just until the camera's next reboot.

Note

If you have set a different user name and password for administration than the factory-preset ones (**admin**, **meinsm**), you will need to have these user credentials ready and enter them in the appropriate dialog. To open the dialog, click on the *Enter password* context menu entry.

Defining Additional Video Sources

Besides automatically detecting MOBOTIX cameras, you can also **manually add other video sources** to the list of available video sources in MxControlCenter.



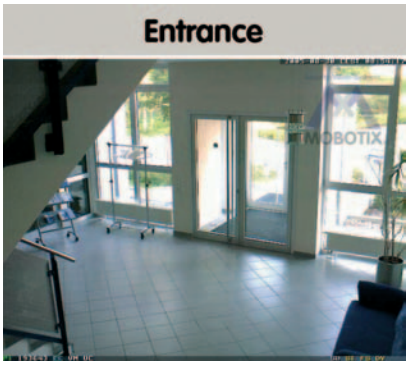
- **Automatic search**: Scans the (physical) network and finds all MOBOTIX cameras, even if they are not in the same subnet as the computer.
- **Add camera manually**: Enter a known IP address or the DNS name of a MOBOTIX camera if this camera had not been detected during the automatic search in the first place.
- **Add MxPEG clip**: Adds an MxPEG video clip previously recorded by a MOBOTIX camera as a video source.
- **Add file server path**: Adds the alarm images previously stored by a MOBOTIX camera on an external file server as a video source.

Selecting Video Sources

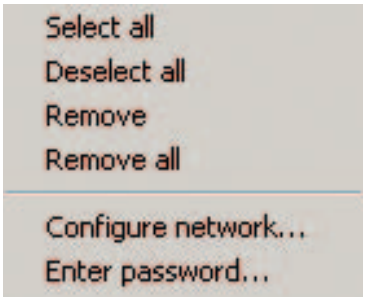
Highlight the desired video sources you would like to manage and display in MxControlCenter in this list.

Camera preview

If you select a camera with a status of *OK*, MxControlCenter **automatically displays the live images from the camera in the preview window**. If you are using [Ctrl]-click to select several cameras, the image from the camera selected last is shown in the preview window. This feature facilitates identifying the cameras you would like to use.



Editing the video source list

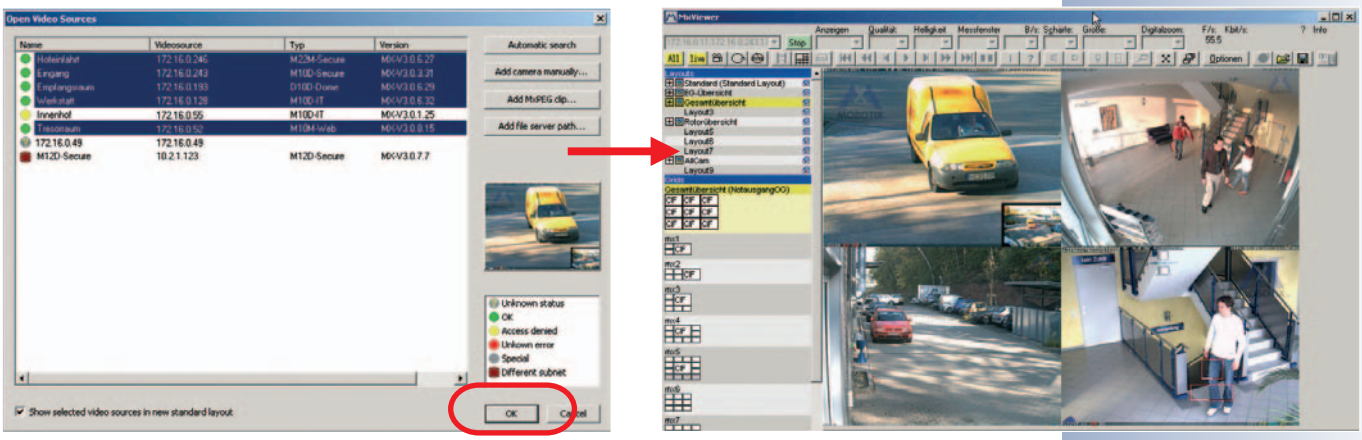


This list provides a popup menu (right mouse key), allowing you to select/deselect all video sources at once. Similarly, you can highlight some or all of the listed video sources and remove them from the list if they are not to be displayed or managed in MxControlCenter.

If you interrupt the discovery process (section *Configuring MOBOTIX Cameras for a Different Subnet*) or require a password that is different from the factory preset one, you can always launch the configuration process from the popup menu at a later time and enter the appropriate user name and password.

Using the selected video sources

Clicking on **OK** instructs MxControlCenter to use the highlighted cameras. Activate the **Show selected video sources in new standard layout** checkbox and MxControlCenter automatically generates a layout with the live images of all highlighted cameras.



Accept selected video sources

3.5 Starting the Camera With an Automatic IP Address (DHCP)

If your network has a DHCP server, you can start the camera with DHCP support. In this case, the DHCP server automatically assigns an IP address.

In order to start the camera using DHCP, hold the **magnetic side** of the supplied **custom tool** onto the spot on the camera housing containing the **L button** (the magnetic switch is mounted inside the camera housing):

Activate the camera speaker!

- Remove the outer shell using the supplied custom tool (see section 2.14, *Dismantling the Camera*).
- If the camera is powered on, disconnect the power supply of the camera by unplugging the corresponding cable.
- Reconnect power to the camera and observe the LEDs.
- Wait until the **LEDs 0 and 5 are lighting up simultaneously**.
- Now hold the **magnetic side of the custom tool** onto the spot above the microphone labeled **L** in the figure.
- Only remove the custom tool when the camera plays a **double sound ("Boing, Boing")**.

As soon as startup has been completed, the camera automatically announces its IP address, its network mask and its MAC address. Please note that this feature needs to be activated for this to work.

You can now access the camera using the IP address it just announced.

Announcement of network data: Press **"L" button**

Note

If you would like to have a running camera repeat its network settings, simply activate the **"L" button** once using the magnetic side of the custom tool.

In case of an error, the camera uses its last IP address

Caution

When starting the camera with DHCP support, make sure that the network has a properly functioning DHCP server. If this is not the case, the camera cannot obtain a valid IP address and will fall back to its last IP address.

3.6 Starting the Camera Using the Factory IP Address

Under certain circumstances, you may have to reset the camera to its factory IP address. This could be the case if the IP address of the camera has been lost or the camera does not react to the last known IP address.

Passwords and camera settings will not be changed!

In order to start the camera using its factory IP address, hold the **magnetic side** of the supplied custom tool onto the spot on the camera housing containing the **L button** (the magnetic switch is mounted inside the camera housing):

- Remove the outer shell using the supplied custom tool (see section 2.14, *Dismantling the Camera*).
- If the camera is powered on, disconnect the power supply of the camera by unplugging the corresponding cable.
- Reconnect power to the camera and observe the LEDs.
- Wait until **all LEDs are lighting up simultaneously**.
- Now hold the **magnetic side of the custom tool** onto the spot above the microphone labeled **L** in the figure.
- Only release the custom tool when the camera plays a **single sound ("Boing")**.

The camera is now accessible again using its factory IP address (see label on the camera housing).

Note

If you use the camera's **"L" button** to load the factory network configuration, this configuration is not automatically saved to flash memory. Upon restarting the camera the next time **without** using the camera's **"L" button**, the *last stored network configuration* will be used. To permanently store the new network configuration in the camera's flash memory, open **Admin Menu > Store ...**

Make sure you store the factory network configuration to the permanent flash memory!

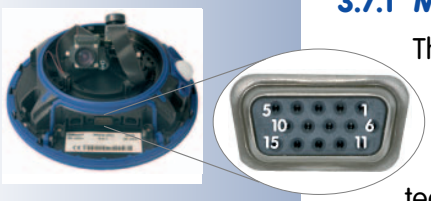
Caution

As opposed to resetting the camera using *Admin Menu > Reset configuration to factory defaults* (see section 1.6.5), the users and passwords defined in the camera will *not* be reset if the camera is being booted using the factory IP address.

Users and passwords will not be changed!

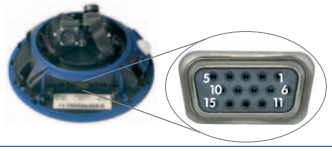
3.7 Connecting External Devices and Sensors: MX Interface Connector and MOBOTIX Cam-IO

3.7.1 MX Interface Connector for Direct Connections



The MOBOTIX camera's MX Interface Connector (D Sub 15 HD) features **one signal input** and **one signal output for switching loads**. In addition, the interface also provides **two signal inputs and two signal outputs of the RS232 interface**. You can use the camera's signal input/output pins to detect an opening door (using a Reed switch) or to switch an external device (e.g. a lamp).

The interface connector also has **Line In/Out pins for external audio devices**. You can use the Line In pin to have the camera transmit and record external audio signals (e.g. from an external microphone with pre-amplifier). On the other hand, the camera can use the Line Out pin to transmit sound to external devices (e.g. an audio amplifier). This in turn opens new possibilities as the camera can feed external loudspeakers (such as announcement systems on a train station) or it can use external and more sensitive microphones that can be placed farther away from the

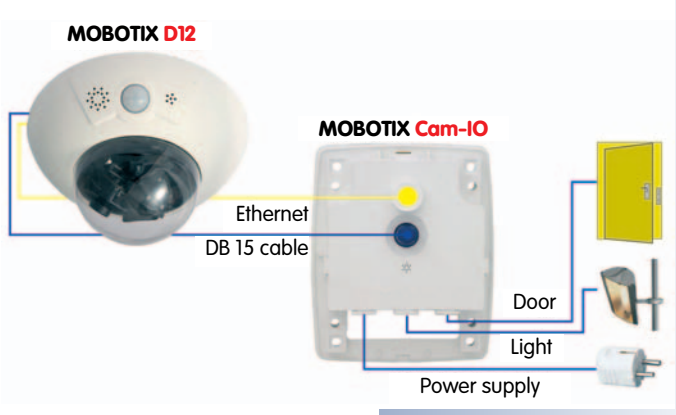
	Pin-out of MX Interface Connector D Sub 15 HD				
	Pin	**Signal**	**Alternative**	**Description**	**Remarks**
	5	GND		**Ground** for RS232, USB, Backup V-In	
Audio	4	Line-In +		**Audio input**, Line signal level U_{RMS}=1V	Galvanically isolated by transformer (DC decoupled)
	6	Line-In -			
	10	Line-Out +		**Audio output**, Line signal level U_{RMS}=1V	Galvanically isolated by transformer (DC decoupled)
	14	Line-Out -			
In/Out	9	In 1		**Signal input**, active <0.5V, inactive >+3V, max. voltage 24V	
	1	Out 1		**Signal output**, OpenCollector, active vs. GND, max. 24V/ 50mA, inactive 10kOhms vs. 3.3V	
USB	13	USB +5V		**Power supply** for USB devices 5V/100mA vs. GND	With backup power (12V) or PoE, 500mA also possible
	11	USB D+		**USB master data signals**, 0V to 3.3V	
	12	USB D-			
Serial interface	2	RxD	RxD RS232	**active** = -3V to -12V, inactive +3V to +12V	
			RxD I/O	**Signal input**, inactive: open or voltage >3V, **active**: GND or voltage <0V, max. ±12V	
	3	TxD	TxD RS232	**active** = -3V to -12V, inactive +3V to +12V	
			TxD I/O	**Signal output**, inactive: <3V max. 3mA, **active**: >+3V max. 3mA, max. voltage ±12V	While the system boots, the signal state is undefined
	7	RTS	RTS RS232	**active** = +3V to +12V, inactive -3V to -12V	
			RTS I/O	**Signal output**, inactive: <3V max. 3mA, **active**: >+3V max. 3mA, max. voltage ±12V	While the system boots, the signal state is undefined
	8	CTS	CTS RS232	**active** = +3V to +12V, inactive -3V to -12V	
			CTS I/O	**Signal input**, inactive: open or voltage >3V, **active**: GND or voltage <0V, max. ±12V	
	15	Backup V-In		**Backup power** 6V to 12V vs. GND, max. 1A	

camera (e.g. when using a MOBOTIX camera as a video conferencing system and in access control scenarios).

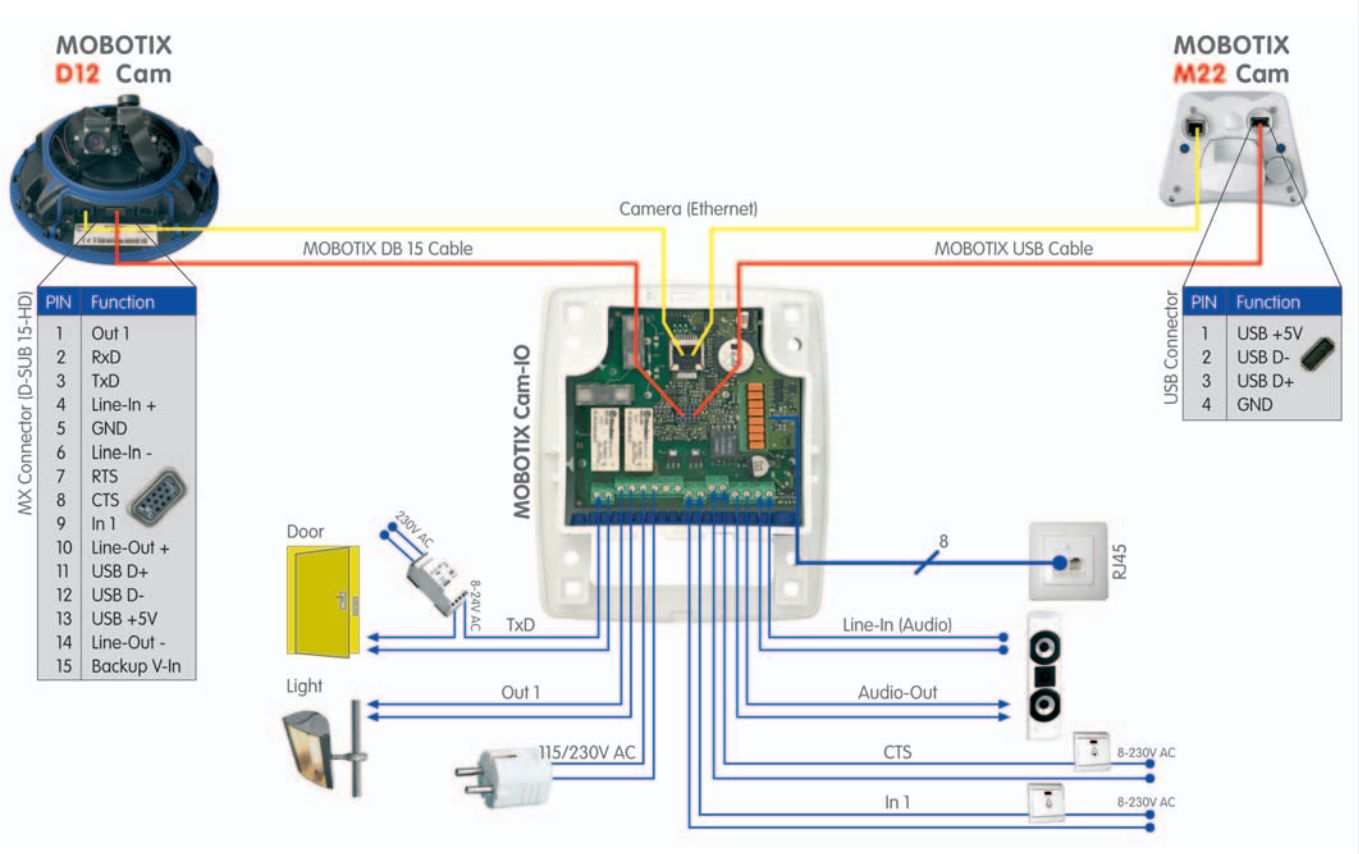
3.7.2 MOBOTIX Cam-IO: Expansion Module for Easy Installation

This expansion module has the following main tasks:

- It represents a unified installation platform with power supply for the MOBOTIX D12, M12 and M22 models with SecureFlex mount.
- It is a unified interface for attaching external sensors (using the signal inputs) and to control external devices using the camera's signal outputs.
- It hooks up directly to utility power and thus can power lamps with up to 500 W (230 V) or 250°W (115 V) or other devices with a power consumption of max. 4 A.
- It can control one more external device using an external relay.
- It allows connecting external speakers and microphones (using a pre-amplifier) in order to implement announcement systems or door communication/ intercom systems, for example.



The MOBOTIX Cam-IO will be available from spring 2007.



3.8 Signal Input/Output, RS232 Interface

The signal lines of the serial interface can also be programmed as additional signal inputs. **Setup Menu > Event Settings > Second/Third/Fourth Signal Input > Signal Input 1/2/3**. This means that you can use three additional signal input lines

Polarity can be switched

Bridge < 2 kOhms

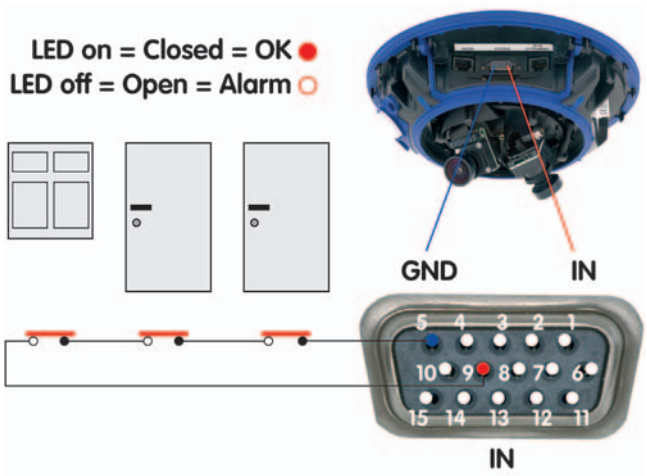
Integrated low-pass filter: 10 kOhms, 10 nF

The MOBOTIX camera provides a signal input/output as well as two additional signal input pins and two signal output pins on its RS232 interface. You can use the camera's signal input/output to detect an opening door (using a Reed switch) or to switch an external device (e.g. a lamp using a relay). The signal input/output pins of the RS232 interface can be used for attaching additional sensors and devices.

3.8.1 Signal Input Pins

Pin 9 of the D Sub 15 HD connector is used for detecting the signal input. To trigger the signal input, simply connect pin 5 (ground) to pin 9 (no current required). You can also connect other devices (e.g. SPS machines) that close a contact (0V) to trigger the signal input.

Click on **Setup Menu > Event Settings** to specify which state of the signal input should create an event—an open loop or a closed loop. For example, if you would like to secure all windows and doors of a building, connect all closed switches in a serial loop and connect the wires to signal input (pin 9) and ground (pin 5). The loop should have a resistance of less than 2 kOhms. This pin of the camera is already equipped with a low pass filter (10 kOhms/10 nF).



Open **Setup Menu > Event Settings** to activate the additional signal input pins of the RS232 interface (*Closed/Low* or *Open/High* option; CTS: pins 8-5, RxD: pins 2-5). Open **Admin Menu > Setup of serial interface and modem** and configure the serial interface accordingly (**Serial**: *Data*, **Mode**: *I/O Mode*).

Click on **Admin Menu > LED Setup** and set one or more LEDs to *Signal input* to display the state of the input signal for testing (*Signal input* option: loop closed = LED on).

"**0**": Current higher than +3 V ==> inactive ==> LED off
"**1**": Current lower than 0.5 V ==> active ==> LED on

3.8.2 Signal Output Pins

Activate the signal output in **Admin Menu > LED Setup** or for specific events in **Setup Menu > Event Settings**

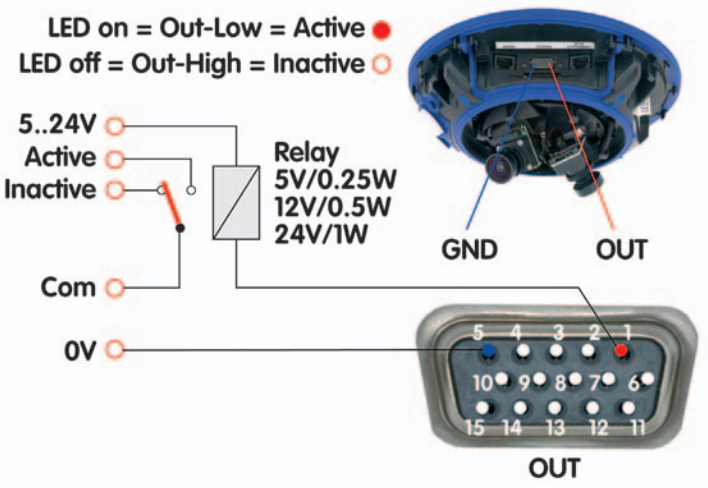
When an event is detected, the MOBOTIX camera can switch the signal output (pin 1). Use the corresponding options in **Setup Menu > Actions** to set how long the camera should close the signal output.

- **Off**: Signal output is open (10 kOhms on 3.3 V)
- **1s, 2s, 5s, 10s, 30s, 1min, 5min**: Closes the contact between pin 1 of the D Sub 15 HD connector and the ground (pin 5). The signal output is protected against power surges and unwanted feedback (±48 V) and switches up to 50 mA. It can thus switch a 12 V relay with 0.6 W and a 24 V relay with 1.2 W.

The event settings allow activating the signal output for a certain time only (to generate an impulse)

Open **Setup Menu > Enhanced Signal Out Options** to set custom switching times for any combination of events (not Web models). This dialog also allows using a time table and setting a dead time.

Click on **Admin Menu > LED Setup** and set one or more LEDs to *Signal input* to display the state of the input signal for testing (*Signal input* option: loop closed = LED on).



Example setup

Select the trigger condition:

- Open (high)
- Closed (low)
- Rising (low to high)
- Falling (high to low)
- Change: (rising or falling)

Besides detecting the current state (open or closed), you may also trigger upon rising, falling or changing signal flanks.

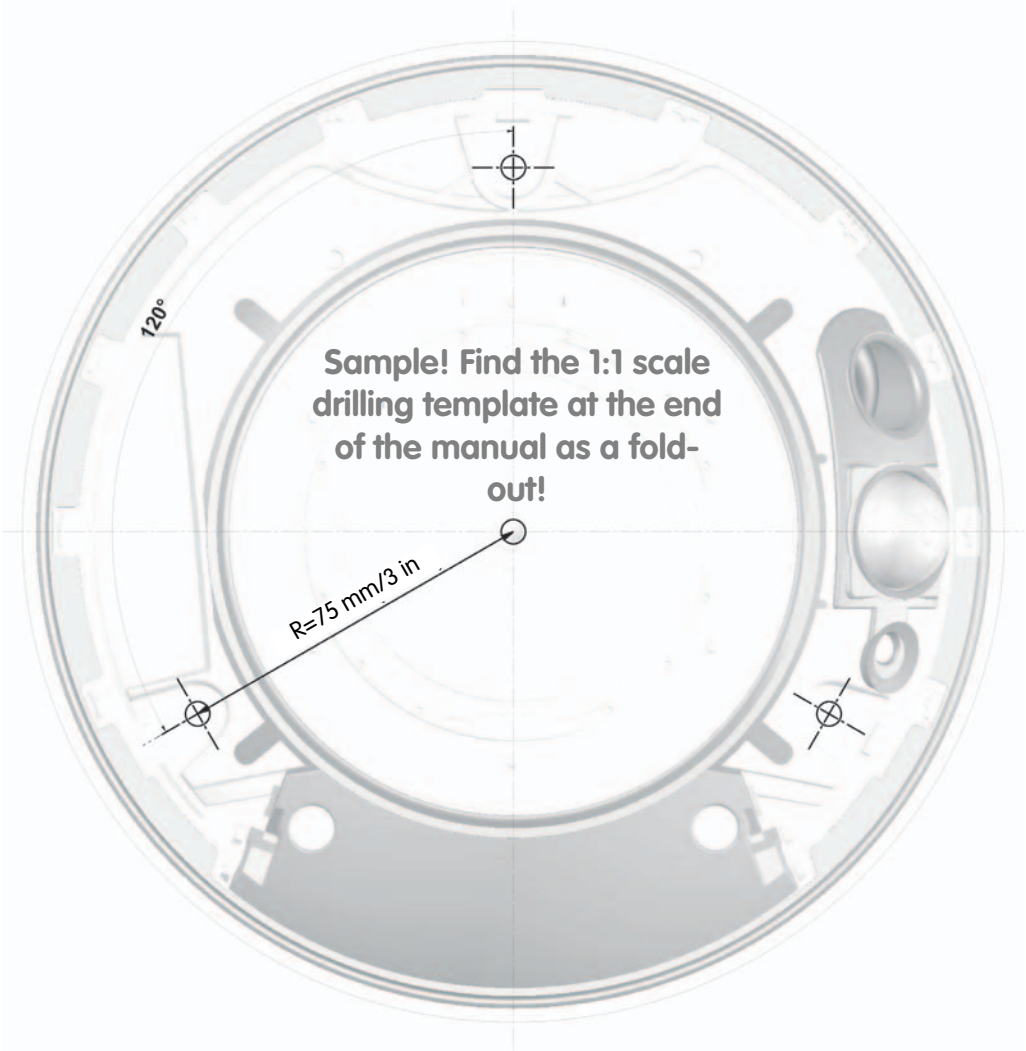
Notes

In contrast to the **signal output pins** of the RS232 interface (pins **3** and **7**), the **signal output pin 1** assumes an inactive state and will stay inactive while the camera is booting.

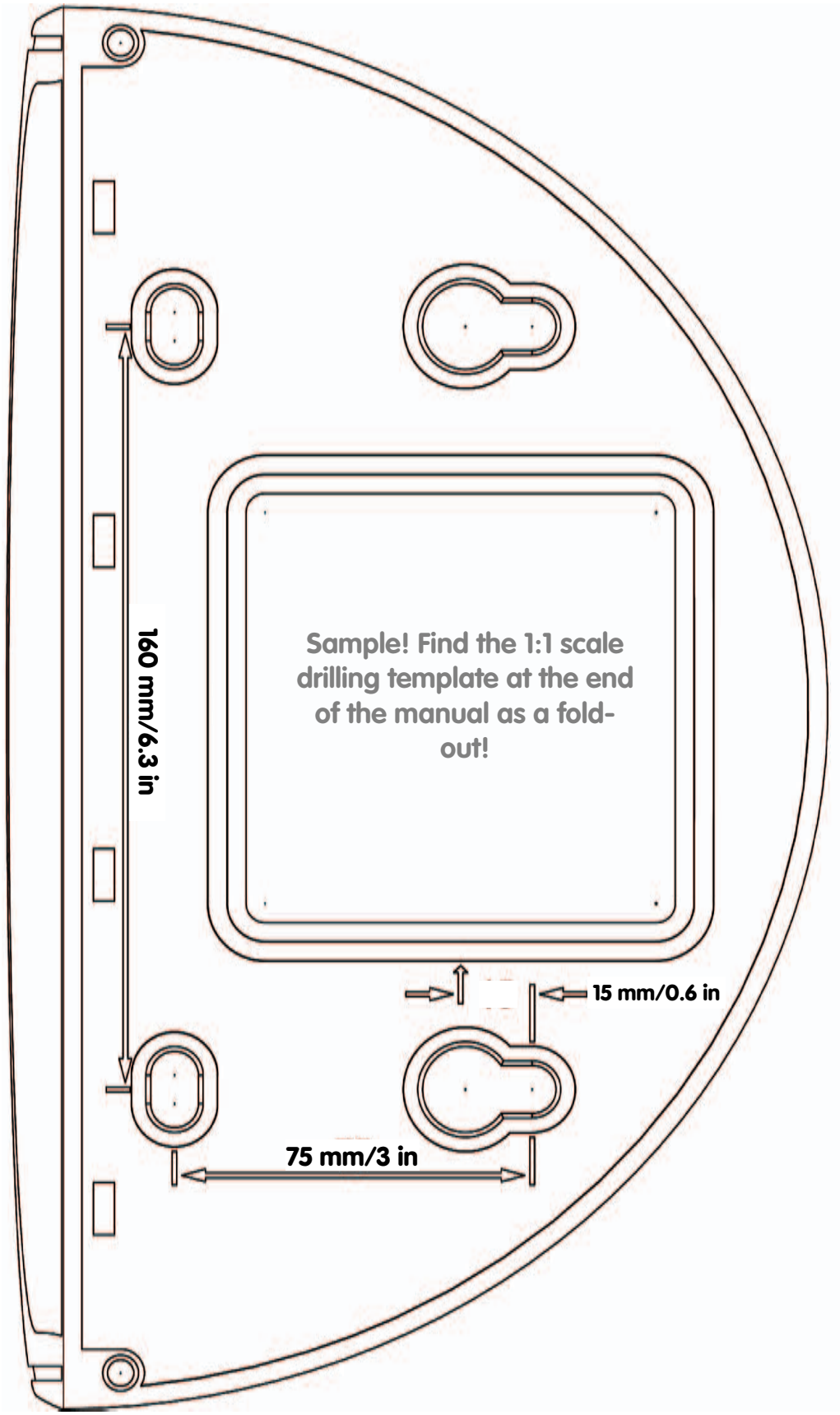
The *Pin-out of MX Interface Connector D Sub 15 HD* table in section 3.7.1, *MX Interface Connector for Direct Connections*, contains a detailed explanation of the individual pins.

Find the drilling templates (scale 1:1) at the end of the manual as a fold-out

3.9 D12 Drilling Templates

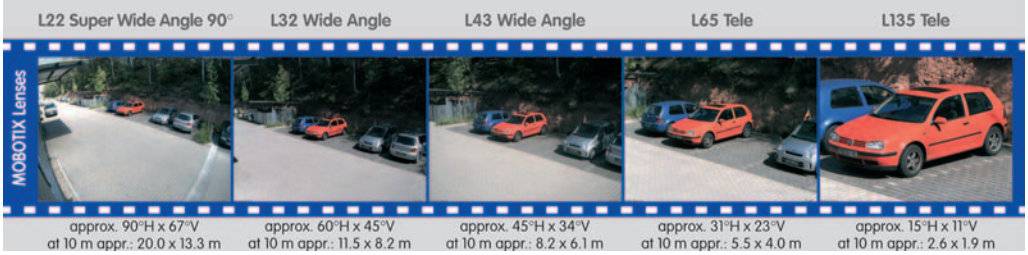


D12



D12 Wall Mount and weather protection

	D12D-IT MX-D12D-IT-D22D22	D12D-IT-DNight MX-D12D-IT-DNight-D22N22	D12D-Sec MX-D12D-Sec-D22D22	D12D-Sec-DNight MX-D12D-Sec-DNight-D22N22	D12D-Sec MX-D12D-Sec-N22N22	D12D-Sec-180 MX-D12D-Sec-D22D22
D12 Hardware Features						
Outdoor weatherproof*	IP65*	IP65*	IP65*	IP65*	IP65*	IP65*
Ethernet, ISDN, USB, RS232	E /I / - /R	E /I / - /R	E /I / - /R	E /I / - /R	E /I / - /R	E /I / - /R
CF slots (MOBOTIX extensions)	X	X	X	X	X	X
Microphone/Speaker	X/X	X/X	X/X	X/X	X/X	X/X
Image sensor	Color	Color/B&W	Color	Color/B&W	B&W	Color
Mono (M) / Dual (D)	D	D-Night	D	D-Night	D	D
Standard lens	L22	L22/L22	L22/L22	L22/L22	L22/L22	L22/L22
Image size	**VGA**	**VGA**	**Mega**	**Mega**	**Mega**	**Mega**
Resolution horiz. x vert.	640x480	640x480	1280x960	1280x960	1280x960	1280x960
Sensitivity at 1/60 second (lux)	1	0.1	1	0.1	0.1	1
Sensitivity at 1 second (lux)	0.05	0.005	0.05	0.005	0.005	0.05
Storage (MB)	**64**	**64**	**128**	**128**	**128**	**128**
Video ring buffer (MB)	32	32	64	64	64	64
CIF images approx.	2,000	2,000	4,000	4,000	4,000	4,000
VGA images approx.	1,250	1,250	2,500	2,500	2,500	2,500
Mega images approx.	-	-	800	800	800	800
External audio (Line-In/Out)	X	X	X	X	X	X
Signal input	2 x	2 x	2 x	2 x	2 x	2 x
Signal output	2 x	2 x	2 x	2 x	2 x	2 x
Concealed cabling	X	X	X	X	X	X
In stock	yes	yes	yes	yes	yes	yes
Outdoor Wall Mount (accessory)	X	X	X	X	X	X


L22 Super Wide Angle 90°
L32 Wide Angle
L43 Wide Angle
L65 Tele
L135 Tele
MOBOTIX Lenses
approx. 90°H x 67°V
at 10 m appr.: 20.0 x 13.3 m
approx. 60°H x 45°V
at 10 m appr.: 11.5 x 8.2 m
approx. 45°H x 34°V
at 10 m appr.: 8.2 x 6.1 m
approx. 31°H x 23°V
at 10 m appr.: 5.5 x 4.0 m
approx. 15°H x 11°V
at 10 m appr.: 2.6 x 1.9 m

	Basic Models	Web Models	IT Models	Secure Models
Software Features (All Models)				
Digital zoom (2x, 4x) with panning		X		X
Motion JPEG/MxPEG video streaming	X/X	X/X	X/X	X/X
Custom exposure windows	X	X	X	X
Video Motion detection	X	X	X	X
Time and event control (FTP, email, logos)	X	X	X	X
Time tables with holidays		X	X	X
Web functionality (FTP, email)	X	X	X	X
Quad/MultiView in browser	X	X	X	X
Recording/Playback in browser	X	X	X	X
Logo generator, animations		X	X	X
Single image recording (pre-/post-alarm images)	3	3	10	50
Terabyte ring buffer (Win/Lin/Mac) via network			X	X
Continuous video/audio recording, 0.2 to 30 fps			X	X
Video/audio recording (event-triggered)			X	X
Event-controlled frame rate with continuous audio			X	X
Flexible event logic				X
Master/Slave arming by one camera				X
Scheduled privacy zones, several areas				X
Bidirectional audio (IP) from/to browser			X	X
Customized voice messages			X	X
VoIP telephony (Audio/Video, SIP)			X	X
Alarm calls to softphones (SIP) e.g. Xten			X	X
Remote alarm notification (via TCP/IP, IP Notify)			X	X
RS232 Data Logger/Terminal			X**/***	X**/***
Programming interface/HTTP API			X	X
Model Limitations				
Image size	VGA	Mega	VGA	Mega
Image sensor (color / BW)	Color	Color	Color & BW	Color & BW
Standard lens for software version	L22	L22*	L22*	L22*
Audio support (Microphone/Speaker)	-/-	-/-	M/S	M/S

The Web version is available only as M12 model

The Basic version is available only as D22 model

D22 IT and Secure models allow connecting an external speaker and microphone. From the factory, the D22 does not have a speaker nor a microphone

* M12 models are delivered with L43 lens

** M22M models require the Cam-IO for this feature

*** Not available for D22M models

IP65 Certificate

VDE Prüf- und Zertifizierungsinstitut

VDE VERBAND DER ELEKTROTECHNIK
ELEKTRONIK INFORMATIONSTECHNIK e.V.

KONFORMITÄTSBESTÄTIGUNG
STATEMENT OF COMPLIANCE

Für das (die) überprüfte(n) Produkt(e)
for the approved product(s)

Erzeugnis *Product*	**FixDome outdoor Secure-Kamera mit Dual-Optik** ***FixDome outdoor secure-camera with Dual-Optik***
Typenbezeichnung *Model/Type ref.*	**D10**
Weitere Information(en) Further information	**IP65**
Warenzeichen *Trade mark*	MOBOTIX
Auftraggeber / Hersteller Client / Manufacturer	**MOBOTIX AG** **Luxemburger Strasse 6** **67657 Kaiserslautern**
Angewandte Normen Applied standards	**Abschnitte / Clauses: 12; 13; 14** **DIN EN 60529/VDE 0470 Teil 1:2000-09** **EN 60529:1991 + A1:2000**
Prüfbericht-Nr. *Test report reference no*	**2514700-9010-0001/65621 FG33/bhl** **2005-11-25**

Die Konformitätsbestätigung erfolgt auf Basis einer einmaligen Untersuchung von Produkten, die in einer zwischen Auftraggeber und VDE vereinbarten Menge aus der laufenden Produktion oder dem bereitgestellten Versandlos entnommen wurden. Sie bezieht sich ausschließlich auf die entnommenen Muster. Bei der im Prüfbericht dokumentierten Untersuchung wurden keine Abweichungen festgestellt. Detaillierte Ergebnisse sind dem Prüfbericht zu entnehmen.
Diese Überprüfung berechtigt nicht zum Führen eines VDE-Zeichens.
The statement of compliance is based on a single inspection carried out on the basis of the samples selected from running production or from a provided delivery lot of a quantity agreed between applicant and VDE. It only refers to the selected samples. No diviations were detected during the inspection documented in the test report. Detailed results can be taken from the test report.
This inspection is no authorization to use VDE marks.

Ausstellungsort / Datum
Place of issue / date
Offenbach, 2005-12-05

VDE Prüf- und Zertifizierungsinstitut
VDE Testing and Certification Institute

Leiter Fachbereich F3
Head of Deparment F3

VDE Prüf- und Zertifizierungsinstitut *VDE Testing and Certification Institute* Merianstraße 28 63069 Offenbach Germany www.vde.com

Declaration of Conformity

Konformitätserklärung gemäß dem Gesetz über Funkanlagen und Telekommunikationsendeinrichtungen (FTEG) und der Richtlinie 1999/5/EG (R&TTE)

Declaration of Conformity in accordance with the Radio and Telecommunications Terminal Equipment Act (FTEG) and Directive 1999/5/EC (R&TTE Directive)

Déclaration de conformité selon la loi sur les équipements hertziens et les équipements terminaux de télécommunication (FTEG) et la directive 1995/5/EC (R&TTE)

Hersteller/verantwortliche Person: Manufacturer/responsible person: Fabricant/personne responsable :	MOBOTIX AG
erklärt, dass das Produkt: declares that the product: déclare que le produit :	Netzwerk-Kamera Network camera Caméra de réseau
Typ: Type: Type :	D12
Telekommunikations(Tk-)endeinrichtung Telecommunications terminal equipment Equipement de terminal de télécommunication	Netzwerk-Kamera zum Anschluss an das EURO-ISDN Network camera for connection to the EURO ISDN Caméra de réseau pour connecter au RNIS EURO
Verwendungszweck: Intended purpose: Le but suivi :	Übertragung von Bildern und Toninformationen Transmission of images and audio information Transmission d'images et du son

bei bestimmungsgemäßer Verwendung den grundlegenden Anforderungen des § 3 und den übrigen einschlägigen Bestimmungen des FTEG (Artikel 3 der R&TTE) entspricht.
complies with the essential requirements of §3 and the other relevant provisions of the FTEG (article 3 of the R&TTE Directive), when used for its intended purpose.
est conforme aux exigences fondamentales du paragraphe 3 du FTEG (article 3 du R&TTE) et des autres clauses s'y rapportant.

Gesundheit und Sicherheit gemäß § 3 (1) 1. (Artikel 3 (1) a))
Health and safety requirements pursuant to § 3 (1) 1. (article 3 (1) a))
Santé et sécurité conformes au paragraphe 3 (1) 1. (article 3 (1) a))

angewendete harmonisierte Normen: harmonised standards applied: normes harmonisées :	EN 60950:2000	(NSR 73/23/EWG & 93/68/EWG) (LVD 73/23/EWG & 93/68/EC) (Directive Basse Tension 73/23/EWG & 93/68/EC)

Schutzanforderungen in Bezug auf die elektromagn. Verträglichkeit § 3 (1) 2, Artikel 3 (1) b))
Protection requirements concerning electromagnetic compatibility § 3 (1) 2, (article 3 (1) b))
Exigences de protection concernant la compa tibilité électromagnétique, paragraphe 3 (1) 2; (article 3 (1) b))

angewendete harmonisierte Normen: harmonised standards applied: normes harmonisées :	EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-6 EN 61000-4-11	EN 55022, Class B EN 55024 EN 61000-6-2 EN 61000-6-3	(EMV-RL 1995/5/EG (R&TTE)) (EMCD 1995/5/EG (R&TTE)) (Directive EMC 1995/5/EG (R&TTE))

Anschrift:
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67657 Kaiserslautern
Germany

+ TK-Nr. / Phone number / N° de communication:

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E-Mail: info@mobotix.com

Kaiserslautern, 01.09.2006

Ort, Datum
Place & date of issue
Lieu et date

Dr. Ralf Hinkel
Vorstand/CEO, MOBOTIX AG

Name und Unterschrift
Name and signature
Nom et signature

Notes

Notes

Notes

MOBOTIX ... the new face of IP video

All images in this manual are genuine MOBOTIX camera images.
Enjoy the image quality!

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Amtsgericht Kaiserslautern
Registration Number: HRB 3724

Tax Code: 19/650/0812/1
Tax Office: Kaiserslautern

VAT ID: DE 202203501

Download the newest version of this document from:
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CE

Technical information subject to change without notice!

Megapixel
1280 x 960
software zoom

30 Frames/s
VGA (640 x 480)
10 fps Mega

-22°F to +140°F
Weatherproof
-30°C to +60°C, IP65
no heating necessary

IEEE 802.3af
PoE
network power
even in winter

microphone & speaker
Audio
bi-directional via IP
variable framerates

Video SIP Client
IP-Telephony
alarm notify,
cam remote control

Video motion
multiple windows
precision pixel-based

lip-syncronized audio
Recording
event-ringbuffer
30 cams each 30 fps

Live viewing
30 cams at 30 fps
all on one screen

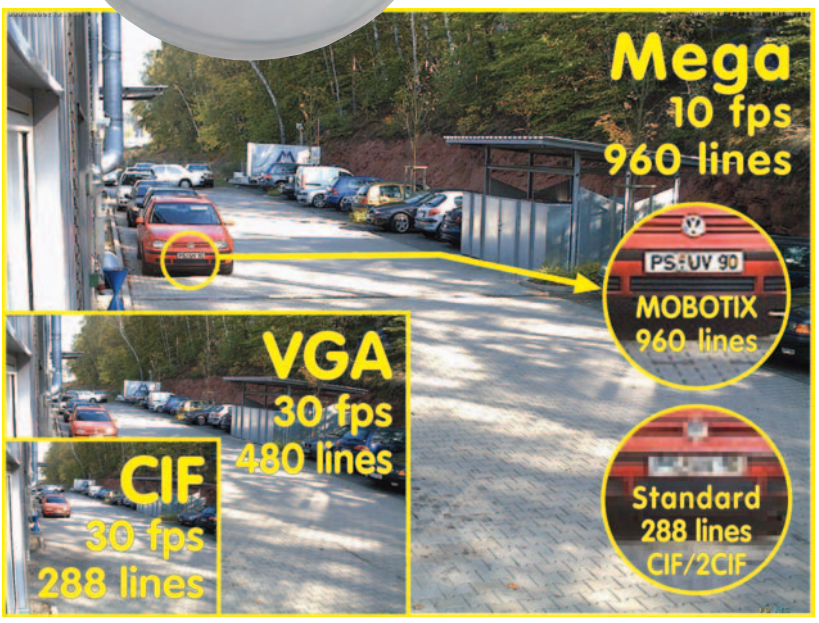
Backlight
safe using CMOS
without mechanical iris

Vandalism-protected
Wall bracket
with cable cover
for RJ45 wall outlet

Robust
no moving parts
fiber glass housing

MX-CM-D12-EN-02

D12
Camera Manual
Part 1



Complete integration for web and security

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